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Our Chapter-Houses: A Comparative Sketch.

IT is seldom that our Chapter-houses are looked at collectively, yet the examination is one of exceeding interest. Grey, still, vast, light, and lofty; full of associations, though, generally, otherwise void, they seem the caskets that once contained the heart of Mediæval life. Some of them have fared well in the centuries of their existence; others have fared ill. They were all of superlative excellence in their time, if we may say so. Westminster Chapter-house was declared by Mathew Prior, in 1250, to be an incomparable edifice. That at York was vaunted to be the house of houses, even as the rose was the flower of flowers.

There was once a grand Chapter-house at Durham, not light and lofty, like most of those that are left to us, but of Norman workmanship, sombre and massy, with zig-zag work on the ribs of its stone roofing, and an arcade of intersecting semi-circular arches all round the walls, just above the stone seats raised on two steps, that were also placed round the walls. Neither was it polygonal like those of later date, but oblong, with an apsidal east end; and in the centre of the apse was a stone chair for the bishop. It was about 78 ft. in length, and 39 ft. in width. At the east end were seven windows, some of which probably followed the curve of the apse; and at the west end a richly-carved doorway gave access to it from the cloisters. On the floor were many tomb-slabs indicating the burial-places of the successive bishops who had departed, including that of the founder, Geoffrey Rufus, and that of Hugh Pudsey, King Stephen's nephew. As century after century went by, some slight changes were made, as when five larger three-light windows were substituted for five of the long narrow Norman lights at the east end; but the edifice retained its proportions, its massive characteristics, and the substance of its Norman arrangements. Unfortunately, some one in authority in the last decade of the last century thought it was too large, and that it would be more comfortable for those who met in it for the discussion of Chapter business if it were modernised and reduced to half its size; and, despite of protest from an appreciating antiquary, John Carter, the key-stones of the carven ribs of the roof were taken out, and the massive vaulting allowed to fall to the ground. The pavement, with the tombstones of all the bishops buried below it, and the bishops' stone chair, were thus completely destroyed. A wall was built across the building, about half-way along its length, and the portion of the Chapter-house eastward of it was levelled to the ground, and the space planted as part of the Dean's garden; and the portion westward of it was made into a snug modern room with a boarded floor, plastered walls, and a coved ceiling. The west doorway was allowed to remain.

The Chapter-house of Alnwick Abbey fared worse. This was likewise an oblong building with an apsidal east end, though of smaller dimensions than the Durham example. There is not one single stone of it left above ground. Its site was quite forgotten, till, a short time ago, some drainers, making a cutting through the old abbey grounds, came upon a tomb-slab, below the soil, with a handsome floriated cross upon it, which circumstance awoke an interest concerning the abbey, and caused the Duke of Northumberland to order investigations to be made, which resulted in the exhumation of all the foundations of the old monastic buildings, including those of the Chapter-house.

All Norman Chapter-houses, however, have not been so unfortunate as these. That at Gloucester endured some fifteenth-century alterations at the east end; but, on the removal of whitewash on the north and south sides not very long ago, painted inscriptions in thirteenth-century characters relating to the burial of benefactors were found there showing how slightly they had been disturbed. This building is also oblong, and measures 72 ft. by about 34 ft., dimensions that are very little short of those of the Durham example. The Chapter-house at Oxford was also originally of Norman workmanship, and has been carefully treated. The lower part of that at Worcester retains its Norman arcading, though the upper parts of the walls were rebuilt in the fifteenth century, owing, it is thought, to signs that they were giving way.

Bishop St. Hugh, of Burgundy, is accredited as the builder of the Chapter-house at Lincoln. It is decagonal, and 60 ft. in diameter; and is said to have been the first departure from the oblong form. Eight flying buttresses support the thrust of the roof; and between each couple of buttresses is a large mullioned window; and it is covered with a high-pitched, conical roof. In the interior there is a central pillar of clustered columns, from which the stone groining rises, and spreads over the whole building. This Chapter-house, like the rest, is full of memories. Edward I. and his immediate successor held Parliaments in it; and here, too, the Knights Templars were tried, and their Order condemned to suppression.

Wells Chapter-house has fared equally well. A touch of yellow ochre may have been given to it, but it has not been cruelly treated. It is octagonal, and 50 ft. in diameter; and the full width of each face of the octagon is filled with a large mullioned window rich with geometric tracery. A central column of sixteen slender shafts rises to the stone vaulting, and ribs from it branch off in every direction, which are met by others, springing from Purbeck marble shafts placed at intervals along the walls, at junctions ornamented with bosses sculptured with foliage. An arcade of fifty-one arches runs round the interior of the building, enriched with crocketted canopies and much sculpturesque decoration. A staircase of forty-eight steps leads to it from the north transept, lighted by traceried windows; and a double doorway, richly moulded and cusped, and enclosed in a single arch, gives access to it. The eye is captivated with the lightness, delicacy, and grace of the general design, and charmed with the exact sufficiency of ornamentation at the first glance; and a closer scrutiny of its details makes it difficult to differ from those who claim for it that it is one of the most beautiful Chapter-houses in the kingdom.

There is a fourth variety of form in Lichfield Chapter-house. This is an elongated

octagon, two of the opposite sides being twice the width of the others. The building is two stories in height, whereof the lower is the Chapter-house and the upper is the library. Worcester conforms to the more usual decagonal plan, with a diameter of about 58 ft. York may be said to present a fifth variety, as there is no central pillar to sustain the groined roofing. Hexham gives us a square form, for it measures 27 ft. each way; and it was divided into nine bays by four piers,—unless, indeed, the portion that is left to us is but the ante-chamber to a larger fabric, now lost, as at Chester. From the remains we now see we may note that the window-openings were treated with much elegance. An isolated shaft, flush with the internal surface of the wall, divided each into two parts; and another isolated shaft on the exterior enriched the arched opening in a similar manner.

But little more than the doorway of Hereford Chapter-house remains, though the memory of its former beauty is still green. It was built on a decagonal plan, with a central column to sustain the groined roof. Forty-five panels round the walls were filled with paintings representing apostles and saints, kings and benefactors. Bishop Egerton is said to have been the author of its demolition; but it was probably in a very decayed condition in his time, as Brown Willis, writing in 1742, said it had been in ruins ever since the rebellion, and that the stones were often carried away and used in other buildings about the church. There is a small chamber over the doorway, curiously called the Ladye Arbour.

Salisbury Chapter-house is very beautiful. It is an octagon of 78 ft. in diameter, external measurement, and 58 ft. in the interior. In the centre rises a clustered shaft, from which the groining rises to a height of 52 ft. Each face of the octagon is filled with a four-light window, with a circle of eight cusps over two quatrefoils in the heading of each of them. Round the walls is an arcade of canopied seats, whereof one at the east end is intended for the Bishop, six others adjoining it for the principal dignitaries, forty-two for the Prebendaries, and one on either side of the entrance for the Chancellor and Treasurer. The spandrels are filled with sculptured representations of sixty Biblical subjects ranging from the Creation to the declaration of the law by Moses. The doorway is adorned with fourteen niches containing figures representing the Virtues overcoming the Vices. But this house has had its dark days. The central pier once inclined 5 in. out of the perpendicular, the walls showed fractures, and the tiled pavement was broken. It was, however, cautiously repaired as a memorial of Bishop Denison, just as Westminster Chapter-house has been enriched in memory of Dean Stanley and his efforts to hand it down to posterity in its original incomparableness.

Westminster Chapter-house has been so far fortunate that its use as a record office, though involving some mutilations, did not call for its demolition, nor for a reduction of its size. It is octagonal, and has six large windows, and a smaller one over the entrance. At first intended for the Council Chamber of the community of monks for whom it was built, it was at an early date used as the Parliament-house, or centre to which the nation sent its representatives when summoned by the King; and when the Commons subsequently met in the chapel of St. Stephen, it was claimed as crown property, and, as indicated, devoted to the reception and safe keeping of the public records. When these were removed to their present quarters, and all the fittings taken down, the Chapter-house was repaired, or restored, as we phrase it, and now has an air of repose and dignity in its rich sumptuousness, befitting its historic services and claims. Dean Bradley, in an appeal for funds for certain perfecting touches still deemed requisite, asks if there is any other building in the world with such a widening stream of associations.

As at Hereford, only the richly-carved doorway of the ancient Chapter-house of Rochester is left to us. The present room used for the purpose for which it was intended is a plain modern apartment that has been called mean. The doorway, too, of Norwich Chapter-house has been spared us, though the house was in ruins as long ago as 1569, and the doorway built up till about thirty years ago. On the other hand, Canterbury has preserved its Chapter-house, notwithstanding the more perishable material used for its roof, which is of oak of late fourteenth-century workmanship. York, too, has been equally conservative, and the "house of houses" is still worthy of all the praise that has been bestowed upon it.

On May-day, 1242, Queen Eleanor, wife of Henry III., came into the Chapter-house at Winchester, an old chronicler tells us, and was received into the society as a honorary member of the convent. These few words give us an insight as to some of the uses to which these chambers were put, as well as a presentment of this particular one on the occasion of this important function. We may picture to ourselves every seat round the wall occupied by the silent face-shadowed recluses, groups of favoured spectators formally arranged not to interfere with the ceremony, the dignitaries of the church in their places, the entrance of the Queen's train, her presence, her pages, and imagine we hear the rustle, the foot-falls, the hush; and, as we make our way towards the cathedral through the ancient streets, something of the reverence and resonance of the ceremony seems to be present still.

There is a general correspondence in the position of Chapter-houses with reference to their respective cathedrals, though there is also considerable variety. Many, if not most, are approached from the east side of the cloisters, as at Gloucester, Norwich, and Westminster. But the cloisters are sometimes to the north of the cathedral, and sometimes to the south of it. At Durham, Hereford, and Salisbury, for instance, the cloisters are on the south side of the great fabrics to which each belongs; at Canterbury, Chester, and Lincoln, they are on the north side. Some Chapter-houses open out of the cathedral, as in the York and Wells examples, which are approached from the north transept; in the Rochester example, which was entered from the south-east transept. At St. Asaph's, the south transept is used as a Chapter-room. At Bangor, the Chapter-room is also the library. At St. David's, St. Thomas's Chapel is used as a Chapter-house. In the matter of size, they range from 50 ft. in diameter, internal measure, as at Wells, and 58 ft. as in the decagonal example at Worcester, to the nobler dimensions of the oblong forms which extend to 70 ft. and 80 ft. in length.

THE SANITATION OF VENICE.

(FROM AN ITALIAN CORRESPONDENT.)

REFERENCE has been made in a former article in the *Builder* to the complaints to which the preliminary schemes for the sanitation of Venice gave rise. That article was in a sense the re-echo of those complaints, and now the report of the Committee appointed by the Italian Government for the purpose of considering the question impartially furnishes the justification for the remarks then made. The Government was anxious that this Committee should be a mixed one, that is to say, that its members should be selected equally from amongst those interested in art and history, from amongst the guardians of the public health, from amongst technical authorities on public works, and from amongst those representing the communal interests of Venice, and that they should be empowered to examine each of the schemes submitted, so as to form an opinion as to their practicability and relative merits, and to suggest modifications where desirable.

Modern life is, of course, surrounded by exigences which cannot and ought not to be overlooked. Yet, on the other hand, Venice, as has been said hundreds of times, is one of the monuments of the world, where, so to speak, every stone possesses a history, and in which every step revives glorious memories of the past. It is true, no doubt, that Venice is one of the leading Italian cities; it is a most interesting port, and a very important military centre. Hence it is not to be merely regarded as a museum, but rather as a centre of modern Italian life, requiring all those means which tend to facilitate the development of its present activity. Thus those would be justly deserving of blame who, through an excessive spirit of conservatism, would desire to stifle every movement tending to improve its general condition. Hence the necessity of the mixed committee who have recently presented their very full and detailed report, which is the subject of the present article.

Before proceeding to the examination of the schemes* the Committee took into consideration the following questions: Is Venice in such a condition as to require sanitary improvement? What are its requirements from a hygienic point of view? How are these to be provided for while respecting the claims of history and art?

To the first of the three questions the Committee at once replied affirmatively. And the reason of such affirmative reply is not far to seek. For instance, during the last decade, the mortality of other Italian and foreign cities, with rare exceptions, has been on the decrease; in Venice it has risen from 22·5 per 1,000 in 1881 to 27 per 1,000 in 1890. In regard to this, the Committee remarked that, for the last ten years, owing to new industrial improvement in Venice, a good many buildings had been pulled down, especially in the districts where the artisan element and the poorer classes predominate. It was not taken into consideration that, when these buildings are demolished, many of these people would be homeless. It would have been prudent if such demolitions had been followed up by new buildings. But this was not thought of, and hence, owing to the increase of house-rent, the speculator, on the one hand, saw an opportunity for rendering habitable, or, rather, for christening with the name of habitable abodes, damp and unhealthy resorts on the ground floor; and, on the other hand, as wages did not increase in proportion, the poor people endeavoured to save themselves from greater difficulties by subdividing the burden of the rent amongst several families. In this way these resorts became the shelters for a number of persons in excess of that laid down by every elementary principle of hygiene, and became most dangerous centres of infectious diffusion. From the examination and comparison of facts and figures it appeared, therefore, to the Committee that there were no existing causes of an insanitary state of affairs which could be ascribed to the characteristic and peculiar conformation of the city, but that the increased rate of mortality during recent years should be attributed solely to the crowded population, more especially in certain districts and in rooms on the ground floor, which are beyond doubt unhealthy.

It may be observed that in Venice the maximum of superficial density per hectare of ground built on, given for the parish of S. Martino, viz., 911·6, corresponds to a mortality of 30·4 per thousand, whereas the minimum, furnished by the parish of S. Niccola da Tolantino, viz., 277·2, corresponds to a mortality of 27 per thousand. Better still, on the Giudecca, where the population is 157·8 per hectare of surface built on, the mortality was 22 2 per thousand, inclusive of the deaths in the penitentiary; and if these latter were excluded, the co-efficient would come down to 17·7 per thousand.

To improve the dwellings and to provide for a reasonable distribution of the districts where the density of the population is greatest, is the real and leading problem for the sanitary improvement of the city of Venice.

Then let the streets be widened. But in this widening process it is requisite to pro-

* Sixteen were submitted.

ceed cautiously, say the Committee, otherwise we shall have a renewal of the complaints, which, as members of the Committee, it is our duty to avoid by endeavouring to harmonise historical and artistic requirements with those of public health. In Venice the leading routes on land, which diverge from the centre to the remoter districts, in some places are not adequate for the required traffic. The necessity for providing a permanent improvement in this respect is emphasised by comparison with the greater convenience and dimensions of the new roads recently opened. It is therefore natural that a scheme for improvements should study to introduce uniformity by altering the too narrow parts of the leading thoroughfares in conformity with the other parts of the same thoroughfares. The Committee, therefore, adds that if reasons of traffic require it, hygienic reasons to a still greater extent justify the abolition or widening of some of the streets, now excessively narrow, and which have become deposits of filth, bereft both of sun and air. But in studying a new plan, or modifications to be introduced into the existing plan, we must not forget that the rectilinear streets and the alignments of the modern plans are not adapted to the peculiar characteristics of Venice. Abandoning, therefore, the idea of rectilinear streets and alignment, and having in view the plan of winding and broken streets, being persuaded of the historic importance of the old roads, we agreed (say the Committee) as to the advisability of retaining the existing plan, and of not modifying the topography of the city. The majority of the official Committee was agreed as to the necessity of preserving, as far as possible, the present aspect of Venice, and, with reference to this point, they added that the narrow streets in Venice are not always prejudicial to the public health, and that those who have written and spoken on this subject have overlooked one of the principal elements in the case, namely, the direction as regards the prevailing winds. It was not without reason that the ancient Venetians, in the district of Cannaregio, who built large, airy houses, kept the width of the streets within narrow limits, on account of their being exposed to the north winds. With these considerations the Committee believe they have furnished suitable replies to the questions proposed to them.

In speaking of the Committee here, we are referring specially to the majority of the official Committee—for the Committee, as a whole, were not agreed. Hence the report of the majority, as alleged, also involves that of the minority, whose opinions we propose to recapitulate. The minority of the official Improvement Committee was appointed by the Assembly of Hygienists, who were not absolutely willing to agree with the majority (as before stated) on the substantial part of the Venetian question. The minority was in accord with the majority on the general discussion, precedent to the examination of the various plans, as regards the non-advisability of consenting to the demolition or alterations of any work of art, even though of secondary importance (although here it would be easy to drift into exaggeration); they were also agreed on this, that *pari passu* with the architectural improvement, the resanitation of the soil should be carried out by means of a good drainage system, and by means of the periodical cleansing of the canals; but they were not agreed with the majority as regards the width of the strests. According to the minority of the committee, the idea of the majority that streets under 3 mètres wide constitute an integral element in the artistic physiognomy of Venice should be accepted with reserve. The members of the minority supported this view by historical arguments,—little conclusive, as it is obvious, to any one who can see that the minority of the Committee have allowed themselves to be influenced, in their way of seeing things, by their preponderating opinion as to the importance of hygienic conditions.

The minority profess to value what is picturesque in Venice, but they observe that the preservation of so many dull little courts, where such numbers of the population are crowded together, is unbecoming and dangerous — more especially dangerous in the event of an epidemic, during which these courts would become hotbeds for the spread of disease. Consequently, the dissentient members do not admit the possibility of opening new roads in Venice, or of retaining those of the old ones, in which the width should be less than the height of the houses by which they are flanked. In any case they do not, with rare exceptions, admit that the roads in Venice can be of a width less than five mètres. The same members warmly support the plan of houses with the ground-floor slightly raised above the ground level, with one or two upper floors which, in view of Venetian customs, would give the houses an elevation of ten to twelve mètres,—not more. For this reason they admit the minimum of five mètres for the width of the streets. If it were a question of having higher houses, then the width of the streets would have to be increased in such a way as to scrupulously respect hygienic principles, hitherto utterly neglected in Venice.

Many people are of opinion that the minority have considered the architectural problem of Venice solely from the sanitary point of view, and consequently they have not awakened the interest which the dissentients anticipated. At the same time, the report of the majority has not met with the reception which might fairly have been accorded to it, since it is both conciliatory and prudent. And it has been said that in drawing up the preliminary schemes, only one of the two sides of the problem has been studied; that the interests of hygiene and traffic received undue preference. In the report, on the other hand, there seems a tendency to the opposite extreme, and with the majority of the official committee, constituted partly of eminent artists, precedence was given to exclusively artistic interests compared with those of hygiene and traffic.

The problem of the sanitation and improvement of Venice is, no doubt, an exceedingly complicated one, and it is next to impossible to respect all the different interests concerned in such manner as to satisfy the wishes of all those who are devoting their care and study to this architectural problem. It is gratifying however, if surprising, to note that the Committee, before dissolving, were unanimous in voting the following resolution:—

The Committee, referring to the reports of the majority and minority respectively, summarise in the following resolution the opinion in which they were all perfectly agreed, viz.: That the scheme of sanitation of the city,—which for local and economical reasons embraces a minimum portion thereof,—would almost be a futile work if the Commune were not to take careful steps to provide for the following requirements:—

1. The general dredging of the canals, both large and small, in as short a time as possible.

2. The improvement of the drainage and the adoption of a rational system where such does not exist.

3. The cleansing of the cisterns fed by water from the aqueducts.

4. Prohibiting the occupation of low, damp, and insanitary ground floors, and urging the resanitation of such floors and houses as are capable of being rendered sanitary.

The Committee further expresses the opinion that in carrying out the work of sanitation all noteworthy historic or artistic relics, as well as the picturesque character of the city, should be respected, the minority only differing from the majority in their definition of the line of demarcation beyond which offences against the architectural character of the city might be said to commence. Such character should, in the view of the whole Committee, be protected by special architectural regulations and provisions.

A. M.

NOTES.

THE Annual Report by the Board of Trade, under Section 31 of the Railway and Canal Traffic Act, 1888, is of considerable interest, although but few cases have been definitely settled during the time that has elapsed since the publication of the report under this Section last year. Of course, the fact that the revision of rates is still incomplete tends to keep complaints in the background, and we venture to predict that the Board will find their labours under this section very considerably augmented when the new rates come into force. The Report gives particulars of the action taken by the Department in regard to the cases submitted during the year,—which amounted to fifty-five,—and also with respect to several cases which had been left over. The ultimate outcome of one of the latter appears to have given great satisfaction to the complainants,—the Staffordshire iron traders,—the railway company consenting to give rebates as compensation for certain unequal charges against which a protest had been lodged. The Board experience great difficulty in dealing with cases involving inequality of charge, for several reasons. One of these is that the arguments of the complainants really amount, very often, to a demand for equal mileage-rates,—a panacea the adoption of which has long been abandoned as incompatible with "the interests of the public." In a complaint by the Hastings Town Council (which body, by the way, put in an appearance before the Railway Commissioners some fourteen years ago) a comparison was instituted between the rates with Reading, Portsmouth, &c. The railway company replied that an adjustment would probably take the form of a "levelling up" of the rates to Portsmouth and other places mentioned, and that they could not be expected to do this voluntarily, on account of the large interests involved. This brings out clearly the difficult nature of the task set the Board; for, to quote from the report, "Cases which may appear to be, and, indeed, are, of small amount in themselves, may involve very far-reaching issues, and affect a very large area of rates which the companies dare not touch except upon the authoritative decision of a competent judicial tribunal." We are glad to observe that a complaint as to undue preference in the rates for Portland cement from Cambridge to London was amicably settled by the granting of a reduced rate for through truck-loads, and that the concession was a substantial one,—2s. 1d. per ton.

THERE is to be a so-called international "Musical and Theatrical Exhibition" at Vienna next year, the opening day for the show being May 9, and the closing day October 9. This Exhibition, which is to be arranged in the large building in the Prater Park, outside the town, will have two distinctly separate divisions, the one for exhibits of historical and scientific interest, the other for modern saleable articles pertaining directly or indirectly to the purpose of the show. In each division there will be a section devoted entirely to exhibits pertaining to the erection, arrangement, and management of theatres. In the section belonging to the historical and scientific division separate groups will be arranged for "architectural designs of theatre buildings in model or drawing," for designs of "stage machinery," for systems of "lighting," "ventilation," "heating," "fire-protection," &c.; whilst in the section of the business division there will be groups of similar classification in which actually saleable inventions, &c., can be shown. In the first division no fees are taken for the space to be taken up by any exhibit; but the placing of these exhibits in the show is subject to the consideration of a reception-jury, who have powers to refuse such work as they may consider out of place or not deserving of notice. In the second division space is allotted to exhibitors at a fixed charge, in accordance with the situation

Intending exhibitors have in both cases to give notice of their intention to send in work for exhibition by the 31st of this month. Such notice has to be given on certain printed forms, which can be obtained from the Secretary of the Managing Committee, Eschenbachgasse, 11, Vienna, I. The exhibit itself need not, however, reach Vienna until the middle of April. The usual system of distributing awards in the form of medals and diplomas is to be adopted. The exhibition promises to be a success, and, as there will be a number of architectural designs from Austria, Germany, Italy, and Switzerland, we may hope that English architects will also be well represented.

MR. T. C. CLARKE contributes a paper to the August number of the "Transactions of the American Society of Civil Engineers," on "The Advantages of a Longitudinal Bearing System for Railway Tracks," in which he points out that the ever-increasing weight of the rolling-stock demands a much more substantial permanent way than was formerly necessary, and draws attention to the insufficient way the rails are often secured to the sleepers as being the cause of many accidents that have occurred through the spreading of the gauge. The author complains that the timber sleepers are destroyed by the rails cutting into them, owing to the great weight of the locomotives, and that the deflection of the rails themselves between their supports offer additional resistance to the traffic, and he is of opinion that the only radical cure of these difficulties is to return to the old continuous rail and bearing, the bearers being of steel, and of such a section that they can be easily packed, while not preventing the drainage of the track. The deflection of the rails between their supports in a cross-sleeper road has the effect of presenting innumerable small gradients, up which the train has to be drawn, and it has been found by experiment that the horse-power of a locomotive where the permanent way is composed of 65-lb. rails must be 14 per cent. greater than would be required if the rails were increased in weight to 80 lbs. per yard. In our opinion, however, the ordinary cross-sleeper road of the best English railways leaves but little to be desired, and, although it is more expensive than the permanent way used in America, it has many advantages, and economy should not be closely observed where any failure might be attended with such serious consequences. A longitudinal road, with either wooden or steel sleepers, is always a difficult one to keep up, owing to the trouble of packing and draining it effectually; the gauge, however, could be better preserved with metal than with timber longitudinal sleepers.

THE transmission of handwriting and of sketches by telegraphic means is not altogether new, Casselli's copying telegraphic apparatus having been invented some twenty years ago; but this apparatus would hardly have been suitable for transmitting a fairly accurate copy of a photograph, and the contrivance described in the *Electrical Review* of last week is certainly a great improvement, both in accuracy and rapidity of working. A photograph is taken on a film of prepared gelatine, the exposed parts of which are hardened, while those not exposed are partially dissolved out, so that the picture is obtained in relief. The film is then mounted on a cylinder, and a tracing-point caused to move spirally over it as the cylinder rotates, in the same way that a point moves over the cylinder of a phonograph. The movement of the point is made to regulate the strength of an electric current, which again determines the pressure of a triangular graving-tool, which is pressed against a rotating cylinder of blackened wax at the receiving station. So far as a picture can be copied by a single line engraving, a copy will be found traced on the cylinder. The examples given in the *Electrical Review* are certainly not happy, but it seems that the delicacy of the method can be almost indefinitely increased. The time occupied in sending a column-wide illustration is about eight or ten minutes.

WE read that the Croydon Town Council have obtained consent from the Local Government Board to their expending 70,000*l.* upon the erection of new municipal buildings. For these a site is secured, being, for the most part, that of the disused Central Croydon railway-terminus in Catherine-street, which runs from High-street to Park-lane. The new buildings are intended to include a central free library. Thus the existing Town-hall on the west side of High-street, together with other property, will be pulled down, and the main road be widened,—a long outstanding improvement that clears away Surrey-street and Middle-row; the last-named is of itself a very curious, albeit discreditable, survival of olden times. Yet Middle-row has been of importance in its day, for, with the neighbouring purlieus, it formed, in the fifteenth and sixteenth centuries, the main trading street of the town.

IN a paper on "Electric Power Distribution," read by Mr. Spaulding, of Boston, U.S., before the American Institute of Mechanical Engineers, particulars are given of a new application of electricity. It consists in using an electro-magnet for attaching the load to a crane-chain. A case is given in which a load of 9,900 lbs. was lifted by an electro-magnet weighing 1,000 lbs., and supplied with energy by a current of 4·9 ampères and 216 volts pressure. The saving in labour in taking hold and letting go by such a device will be obvious, especially in handling such unhandy goods as pig-iron; but one would be inclined to "stand from under" until the novelty had worn off.

IN a recent issue we gave particulars of tests made in cement briquettes containing varying percentages of salt. The journal of the University of Iowa now gives details of further trials in the same direction made by Mr. M. J. Powers in America. From the former experiments, made by Mr. John Gartland at Governor's Island in New York Harbour, the conclusion arrived at was that the permanent gain in strength in Rosendale cement due to the use of salt water was about 20 per cent., and in the case of Portland cement not less than 10 per cent. permanent gain. In the later tests seven different brands of cement were used, and 3,500 briquettes were broken, thus giving a much larger number of tests for averages than were used in the Governor's Island tests, already quoted by us. In Mr. Powers's tests the gain at first in both natural and Portland cements averaged 30 per cent.; but in the third month in both, and in the second month with the natural cements (in the manufacture of which burning is not carried to the point of vivification), the gain becomes a minus quantity, and the cements become weaker than those mixed with fresh water. Mr. Powers says he was induced to take the matter up in consequence of the variation between results of recent experiments and the teachings of various text-books and earlier engineering papers. His conclusions are "that there can be no doubt that cement mixed with sea-water gains considerably in strength during the first few weeks, but that it does not hold out is clearly proved by these results. . . . The gain also seems to be greater and more permanent with the Portland than with the natural cements. The effect of using a 10 per cent. solution seems not so good as with a 3 per cent. solution."

DR. BARRY'S Report to the Local Government Board upon the sanitary condition of the Kirkheaton Urban Sanitary district gives statistics as to the condition of the district and the action of the Sanitary Authority. In the former portion of the report it is observed that there are a certain number of back-to-back houses, but that habitations are not generally overcrowded on the area; that upwards of half the inhabitants receive their water from the mains of the Huddersfield Corporation, but the remaining houses from field and roadside dip-troughs, cellar-wells, and pump-wells; and what this is likely to lead to appears from the next paragraph of the report—

"*Sewerage.*—The sewerage of the district is, with one or two minor exceptions, of a makeshift and rudimentary character. At Kirkheaton the greater part of the sewage converges to an old rubble sewer, passes thence into a pipe sewer, from that through a channel in the rock, thence again into a pipe sewer, next flows in a channel on the surface, then again passes into a pipe sewer, and finally discharges into Kirk Ings Beck without any kind of treatment whatever. In addition to conveying the major portion of the slop drainage of the village, this so-called main sewer receives the drainage from a mill, where 300 workpeople are employed, and where are provided twenty-one water-closets, five of which discharge directly into the sewer, and sixteen into a cesspool having overflow thereto. The outfall above referred to is situate about 300 yards above a small cluster of houses called Bottoms. The inhabitants of these houses complain very much of the loathsome, stinking condition of the beck, which passes immediately under their windows. And this nuisance is stated to be much intensified during periods of drought. A number of houses on the east side of Kirkheaton drain into a sewer, partly rubble, partly pipe, the sewage delivered by which is said to lose itself somewhere in a fissure of the rock. These rudimentary sewers are unprovided with any proper means for inspection, ventilation, or flushing."

In regard to the Sanitary Authority, it is stated that the by-laws are extremely vague and indefinite in their terms, and very deficient in numerous respects; among other things it is mentioned that there are no regulations in regard to space in front and rear of houses; construction of foundations; provision of damp course; thickness of walls; flues; ventilation of houses; ventilation of drainage; disconnexion of house wastes. Dr. Barry concludes, "as a result of this inquiry it is evident that twenty-nine to thirty years jurisdiction by the Local Board of Kirkheaton has been of little profit to the district."

A REPORT of the same class, comparing the sanitary circumstances with the action of the Sanitary Authority, is made by Dr. Barry in regard to the Cumberworth Urban Sanitary District. The report is of much the same general character as the foregoing one; drinking water from dip troughs near to polluted ground, — or from a stream which a little way above has served as a drinking place for cattle; drains with no proper means of inspection, ventilation, or flushing; house drains frequently constructed of rubble; midden privies with their contents soaking into the ground, and emptied at doubtful intervals, &c. The Sanitary Authority "have no by-laws of any kind whatever."

THE Pendhill (or rather Pendale) estate, consisting of about 100 acres, in Blechingley parish, Surrey, is placed in the market. The late Sir G. G. Scott designed and carried out a restoration of the present mansion; a view of the earlier house, as built, *circa* 1624, by George Holman, of Godstone, is in Manning and Bray's "Surrey." Therein lived John Perkins, member of the Stock Exchange, who built, at a cost of nearly 100,000*l.*, a cattle market in Islington, near to the then paddocks and grazing-grounds, instead of that at West Smithfield. Perkins was in advance of his time, and the project had but a brief life.* Another house was built on this property by Richard Glyd in 1636; its design has been attributed to Inigo Jones. In a field close by, north-east of Holman's house, were found in 1813 the remains of a hypocaust. The field, Bray tells us, is near to the foot of White-hill, up which, and across

*As planned in Cross's large-scale map, 1837, the market, opened in the previous year, extended over 17 acres between what are now Essex- and Southgate roads, where stand Ockendon-, Englefield-, Oakley-, and Church-roads.

Banstead-heath, passed the Roman road out of Sussex, by Godstone, on the way to Woodcote, and near to the fortified ground known as Cardinal's Cap, Caterham. The Manor of Blechingley has been held by many celebrated persons,—at the time of the Domesday survey, by Richard de Tonbridge, Earl of Clare; in later days, by Sir Nicholas Carew, of Beddington, on whose attainder, in 1539, it reverted to the Crown, and was settled on Anne of Cleves, with reversion to Sir Thomas Cawarden, Master of the Revels. It was held also by William, Lord Howard of Effingham, and his son Charles, Earl of Nottingham; and by the Mordaunts, first and second Earls of Peterborough, of whom the latter, Henry, sold it, by a private Act, to John Morris and his partner, Sir Robert Clayton, the "fanatick Lord Mayor" of Dryden's "Religio Laici."

THE *Bookman* announces that prospectuses will shortly be issued for the publication, by subscription, of a book entitled "The Master-Masons to the Crown in Scotland and their Works." It is being prepared for the press by the Rev. R. Scott Mylne, the materials having been collected by his late father, Mr. R. W. Mylne, aided by Mr. David Laing and other antiquarians. The illustrations will comprise reproductions of the original designs by Robert Mylne, Master-Mason to Charles II. for re-building Holyrood House. The text will contain several charters and other documents,—to be printed for the first time,—bearing upon the history and progress of architecture in Scotland. The office of Master-Mason to the King passed from father to son in the persons of the lineal descendants of John Mylne, appointed *circa* 1481 by King James III., who gave him coat-arms,* through seven generations. John Mylne (*ob.* 1621) and his son John (*ob.* 1657) were also Masters of the Royal Lodge at Scone. The latter made, beside considerable works in Dundee and Edinburgh, extensive additions to Drummond Castle, portions of which remain, as well as his celebrated sun-dial in its famed gardens. His son, the fourth John, was appointed Master-Mason of Edinburgh, at a salary of £100 Scots, built the Tron Church (1647), continued Heriot's Hospital, repaired and modified St. Giles's steeple and crown, and made, in 1663, designs for a new palace of Holyrood, to take in Queen Mary's tower,—on a plan deposited in the Bodleian. To him succeeded his nephew, Robert Mylne, of Balfarge, above mentioned, whose fresh plans for Holyrood, as altered by the King, were carried out in 1671-9. Robert took signal part in rebuilding Edinburgh, with stone, when it had been resolved to use timber in the principal streets no more. For his burgh or market at Perth, sold for £5 as old material in 1765, see "The Market-Crosses of Scotland," in our vol. xxiv., pages 185-7. His great-grandson, Robert Mylne, F.R.S. (*ob.* 1811, aged 78), was chosen out of seventy competitors, two of them being Smeaton and Gwyn, to build old Blackfriars-bridge, removed twenty-three years ago.† Of his other work in London, we may mention Almack's (since Willis's Rooms); City of London Lying-in Hospital, City-road; the embankment of the (old) Temple Gardens; Mr. Coutts's house in Stratton-street; the east front of Stationers' Hall; the "Si monumentum requiris circumspice" in St. Paul's. Of his second son, William Chadwell Mylne, we published an obituary notice on January 2, 1864. He succeeded his father as Chief Engineer to the New River Company.

WE regret to learn that M. Alphand, the energetic "Directeur des Travaux" under the Paris Municipality, died last Sunday, at the age of seventy-four. He was a man of shrewd intelligence and great energy, who during thirty-seven years had given his whole time and efforts to the sanitation and embellishment of Paris. The success of the Exhibition of 1889 was in a great degree due to his administrative energy, and may be considered the crowning work of his long career. His death leaves a vacancy in the municipal administration which will not be easily filled up. None of his subordinates appeared to have the power which he possessed of uniting the management of so many different matters as he took in hand, and it is probable that the functions of "Directeur des Travaux de Paris" will be divided in future among several persons.

THE terrible earthquake in Japan will probably have the effect of checking the unfortunate Japanese in the indulgence of their rage for Europeanising, in one respect at all events. There seems little doubt that the calamity was intensified by the partial adoption of brick and stone buildings on European models, but badly built, and which, even if well built, are far less safe against an earthquake than the timber houses of the country. The Japanese inhabit what has long been *par excellence* the country of earthquakes, and had evolved a domestic architecture suitable to the circumstances; and they would probably do wisely to return to it.

WE have received the first five monthly numbers of the Journal of the Sydney Architectural Association, published under the title of "S.A.A. Notes." The new Association seems to have commenced its work with spirit and energy. It has established a Class of Construction, a Class of Design, and an Advanced Class of Design, and among those who are helping in the movement are some whose names were formerly well-known in the London Association, among them Mr. G. J. Oakeshott, whose drawings appear to have been much admired at Sydney, and who at the meeting of June 1 read a paper on "Sketching." The problem of architectural sketching must indeed be a very different one, in a new country like Australia, from what it is in Europe, nor does one see exactly what the young architect there is to sketch, unless he follows the suggestion made by one speaker, and sketches modern buildings with subjoined sketches of suggested improvements. The task which lies before the Australian architects is to make an architecture which future generations will think it worth while to sketch.

THE forthcoming appearance of a new American architectural paper, to be called *The Architectural Review*, is announced by the Boston publishing firm of Bates, Kimball, & Guild.

A CORRESPONDENT sends us the following advertisement, which we regard with some alarm:—

"SUNDIAL WANTED, with stone stand, and step; with inscription preferred. Also unmounted Sundials for pillars, and those for affixing to house fronts.—Address," &c., &c.

This seems like offering a kind of premium for the removal of old sundials from their original sites, and offers, as our correspondent observes, "a great temptation to gardeners, sextons, and such folk." If people want sundials, cannot they design and make new ones, instead of ravishing old ones from their places?

THE CARPENTERS' COMPANY.—We are asked to mention that the Worshipful Company of Carpenters, in conjunction with the Sanitary Institute, are about to establish examinations in sanitary subjects. These examinations are intended to be suitable for clerks of works, builders' foremen, and others who have to deal with the construction of buildings. For the benefit of candidates who propose to attend the examinations, a course of nine lectures has been arranged, and will be given at the Carpenters' Hall during the months preceding the examinations.

PRIVATE BILLS: SESSION OF 1892.

WE are authoritatively informed that the sets of plans and maps which have been deposited, as required by statute, in the Private Bill Office, House of Commons, and now ranged in the new rooms along the western side of Westminster Hall, number 214 [206].* The sub-totals stand thus:—Railways, 55 [49]; tramways, 7 [5]; miscellaneous, 53 [47]; provisional orders, 70 [43]; and electric lighting orders, &c., 29 [62]. Since the Bills and Orders to which the plans and books serve as references will not be finally lodged until the 21st of the current month, and some of them may be straigthway abandoned, their several totals cannot yet be ascertained. But according to the "notices" they should amount to, Private Bills, 188 [196], and Provisional Orders, 69. The former include 11 tramways, 21 Corporation and Local Board improvements, 33 gas, water, and electric lighting, 81 railways, docks, and canals: the latter relate to electric lighting, 30; gas and water, 16; piers and harbours, 13; and tramways, 10. We read, too, that of the thirteen electric-lighting orders some concern areas in London that are already allocated to other companies under similar orders previously obtained.

The projected railways in London are unusually numerous,—amounting to, say, twenty-four in all; and four of them are designed to pass under or over the Thames. Premising that a full nominal list would occupy too much of our space, we will give, in outline, the intent and scope of the more important measures.

London County Council.—The Council promote four Bills: one, in conjunction with the Corporation, for appointment of a committee of members of both bodies to acquire, construct, and maintain existing or new water-works, aqueducts, reservoirs, &c, with provision for the dissolution of any water company, and for powers to (1) regulate the strength, character, weight, and materials of fittings and appliances in order to prevent misuse and waste; and (2) make any public or private inquiry into the existing supply in the metropolitan area, charges, and possible future sources of supply. It is stated that if this measure comes to nought, the cost of its promotion will be borne by the Corporation; a Subways Bill, in respect of gas, water, telephone, and other main pipes and wires, together with re-arrangement and control thereof; a Bill for a tramway,—with animal power or electricity,—along Westminster Bridge and Victoria Embankment to beneath Charing-cross railway bridge; and a General Powers Bill, to include the opening and maintenance of Lincoln's Inn-fields garden for public recreation.†

London and Suburbs: Communication and Conveyance.—By the Central London Railway, to divert and extend to Liverpool-street their underground line (Bayswater to the City), authorised by an Act of this year, by a line from the Poultry, eastern end, to the Liverpool-street terminus at Skinner-street. By the Manchester, Sheffield, and Lincolnshire Railway (Extension to London, &c.), to appropriate the "St. John's Wood" site, upon a wider area, south and west, than already proposed, in the Lisson-grove, Blandford- and Dorset-squares, and Boscobel-gardens districts, to take the Clergy Orphan Girls' School (about 8,630 square yards), in St. John's Wood-road, exchanging portion of the land for a portion of Lord's Cricket-ground, and to make two roads through the whole site. At a meeting of the Marylebone Cricket Club on Monday last a motion to oppose the Bill was lost by 96 to 65 votes. The terminus is planned in the Marylebone-road, north side, westwards of Upper Baker-street. By the Royal Exchange and Waterloo Railway, a line from Waterloo terminus to Southwark-street, thence by a bridge over the river to Crooked-lane and Arthur-street West, traversing four City parishes on the river's left bank, and having junctions with the London and South-Western's Windsor line, and the London and Brighton main line in St. John, Horselydown. The three companies will arrange for working the traffic. By the Waterloo and City Railway, an underground line from near to Waterloo station, thence under the Thames to Bridewell, and

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* Or, a cross moline az., quarterly, pierced of the field, between three mullets of the second; crest, Apelles's head, with helmet, proper; motto, "Tam arte quam arte." See transcript from the Lyon record, *Notes and Queries*, March 11, 1865.

† See the *Builder* September 8, 1855: "Some Memorials of Old Father Thames."

* The corresponding totals for last year are printed within brackets.

† Notice had been given for a private Bill to that end, by compulsory purchase, or transfer of the trustees' rights to the Council. But in view of the Council's Bill, the promoters will, for a while, suspend action. The garden was enclosed *temp.* George II., and vested in twenty-one trustees, with power to levy a rate upon owners and occupiers of houses in the fields.

then through twenty-three City parishes to the Mansion House, north-east corner—with a 4 ft. 8½ in. gauge, and haulage or electricity for motive power. By the City and South London Railway, to extend their existing subway from the Borough, then under the river, on to the Bank, Moorgate-street, City-road, and "Angel" Tavern, with a link to Monument station. By the Hampstead, St. Pancras, and Charing-cross Railway, for a line, having any motive power other than steam locomotives, from Hampstead, *viâ* Haverstock-hill, Camden Town, Hampstead-road, Tottenham-court-road, to Charing-cross, and branches to Euston, St. Pancras, and King's-cross stations. By the Baker-street and Waterloo Railway, a line, with electrical power or cable draught, beneath the Thames, Northumberland-avenue, Charing-cross, Haymarket, Regent-street, and Portland-place. The London, Brighton, and South Coast Company intend to enlarge Victoria station between Wilton and Belgrave roads, to rebuild East Croydon station (Addiscombe-road), a very desirable improvement; and to again widen Clapham Junction. The South-Eastern want to widen their line at Charing Cross, Lambeth, Southwark, Bermondsey, and Blackheath. The Regent's Canal, City, and Docks Railway Company seek to abandon certain railways authorised by their Act of 1882, and an extension of time to complete others, beyond the extension obtained under their Act of last year; also to reduce capital and borrowing powers. The plans of the London, Tottenham, and Epping Forest line from the Great Eastern at Whitecross-street to Hackney, Walthamstow, and Waltham Abbey, take four acres of Epping Forest. By the Great Northern and City Railway, for a line from the Finsbury Park and Canonbury branch of the Great Northern to Finsbury-pavement, to be worked by electrical or such motive power as the Board of Trade may sanction. The Midland, who, it is stated, have already offered 100,000*l.* for the St. Pancras workhouse and vestry offices sites, ask room for additional sidings, &c., on the land lying between Phœnix-and Platt-streets, Somers Town; and to take the ground between Pancras-road and a new street, to be of their making, from the one street to the other. In this quarter, too, the London and North-Western Company want fresh ground between Drummond-and Melton-streets and Euston-road, and Approach-road. The Metropolitan Railway propose to construct subways into Euston and King's Cross terminus stations. A report drawn by the General Purposes Committee of St. Pancras Vestry recommends that a petition be made against these and all kindred schemes of this season affecting their parish.

The Alexandra Palace.—The London Financial Association desire to renew their Bill of last Session for a repeal of the Muswell-hill Estate and Railway Act, 1866, and thus to secure for themselves a free disposal of the Palace and grounds. But mindful, it seems, of the opposition they encountered this year, they will enable the Middlesex and London County Councils, the Corporation, and the Local Boards for Wood Green, Hornsey, and Tottenham to covenant with them for reserving the whole or any part of the grounds and Palace as a place of public resort or recreation.

Westminster (Parliament-street) Improvements.—For revival and extension of powers and time conferred and limited by the Acts of 1887 and 1890 as to the compulsory purchase of lands between (1) Broad Sanctuary and Great George-street, and (2) Charles-, Great George-, Parliament-, and Delahay-streets; and for arrangements in that behalf with the London County Council, the Westminster District Board of Works, and the Commissioners of Woods and Forests.

Electric Lighting.—By the Whitechapel, Lambeth, Finchley, Shoreditch, and Hampstead Vestries or Local Boards; the County of London (North), and County of London (South), Camberwell and Islington, Putney and Hammersmith, and East London (Hackney) Companies; St. Mary, Islington, by a private firm.

West Ham.—Provisional Orders.—These are three in number, relating to the widening of streets in Plaistow, Canning Town, West Ham, and Stratford; a subway for passengers beneath Victoria Dock tidal-basin; and the repeal of certain Acts of 1888-90, so as to retain a site for an electric light station, a public library, and other purposes.

The Provinces.—Conveyance and Communication.—The Lancashire, Derby, and East-Coast Railway, to construct branch lines, with other works, in the counties of Chester, Derby, Nottingham, and Lincoln, and take over the North Sea Fisheries (East Lincolnshire) Harbour and Dock Company's property, the Great Eastern subscribing and holding not more than 250,000*l.* of the capital. The London and North-Western, Midland, Mersey, South-Eastern, London, Chatham and Dover, North-Eastern, and Great Northern Companies are represented, but their several schemes call for no particular remark, except that that of the last-named threatens with demolition a fine Elizabethan mansion at Bourn, known as the Red Hall, a home of the Digbys, and traditionally associated with the making of the "Gunpowder Plot." The Metropolitan Company seek for further powers to complete their Aylesbury and Rickmansworth line. With this advance into Buckinghamshire and that of Sir Edward Watkin's other line,—the Manchester, Sheffield, and Lincolnshire,—southwards from Beighton Junction near to Sheffield, to Annesley in Notts, the two railways draw nearer together, and, as we take it, will unite at Quainton-road, on the Aylesbury and Buckingham branch of the Metropolitan Railway. A company intend to make a canal between Bedford and the Grand Junction Canal, near to Stony Stratford, with navigation rights in the Ouse between the former town and Earith, Hunts. This would establish communication by water between London and Birmingham. The New Telephone and National Telephone Companies promote Bills for laying or erecting pipes, wires, and other plant and apparatus within the United Kingdom. The Southampton Docks Company promote a Bill for leave to sell their docks to the London and South-Western Railway. The Holsworthy and Bude Railway, as authorised by recent Acts, is to be abandoned.

MAGAZINES AND REVIEWS.

Among the magazines specially devoted to art, the *Art Journal* continues Mr. Raffles Davison's article on a Modern Country House, with charming sketches. Mr. W. M. Conway has a short article on "The Lesson of a Persian Carpet," in which he denies that the Arabs at and before Mohammed's day possessed any independent art traditions, and proposes to show that the style of carpet called the Persian carpet was a type descended from pre-Moslem days, and represented the plan of a royal pleasure-garden or paradise. It is announced that the element of a story connected with art will be introduced into the *Art Journal*, which we may observe, in its old days, many years ago, used to keep stories going regularly (we do not know that they were very good ones).—The *Magazine of Art* contains an article on the medals of the brothers Wiener, many of which, as shown in the illustrations, were devoted to architectural subjects, which, however, are not the best type of subject for medal modelling, however historically useful such medals may be as records. The "Illustrated Note-book" article is a good feature, and includes portraits of Delaunay and Ribot and George Wallis, and small illustrations of the Fine Art building at the Chicago Exhibition and of Mr. Webb's design for the completion of South Kensington Museum. Architecture, we believe, is to receive more attention than hitherto in the *Magazine of Art*.

The *Antiquary* contains a paper on "Researches in Crete," by Dr. F. Halbherr, with some illustrations of architectural remains, including a sketch of a piece of Cyclopean fortification of primitive character. We cannot agree with the *Antiquary* in making light of the protest that has been made against the erection of numerous *iron* guide-posts, painted red, in the Lake district. It is averred that the offensive red colour is only the first coat, but in any case iron is a most unpicturesque material to thrust into a rural landscape. Guide-posts in themselves are desirable, and save much trouble, but in such a district they should be as unobtrusive as possible, and wooden ones would be far less obtrusive than iron.

The *Gazette des Beaux-Arts* contains the first of a series of articles by M. Maurice Maindron on the collection of arms and armour in the new gallery at the Louvre called "La Ferronnerie." This is accompanied by some illustrations which give a high idea of the artistic value and interest of the collection. The gem of the collection is said to be the armour described as that of Henri II., of which the shield, of which an illustration is given, is a masterpiece of Renaissance "orfévrerie," a term the author deliberately adopts for a work in iron such as could only have been made by silversmiths. The body armour of the same set is also illustrated, and is worthy of the shield. M. Lafenestre concludes his article on Delaunay, with illustrations from the master's portraits and from some of his ideal designs. Three of the illustrations, the rugged but dignified portrait of General Mellinet, the piquant half-length of Mdme. Bizet, and the classic group of "La Nymphe Hespérie," furnish together a remarkable testimony to the versatility as well as the elevated style of Delaunay's work.

The *English Illustrated Magazine* contains a short article by Mr. R. T. Blomfield, "On Gardens and Grounds," with illustrations by the author and Mr. F. Inigo Thomas. This is really, like Sedding's book which we recently reviewed, a plea in favour of the formal or architectural garden as opposed to the "landscape-gardener's" arrangement of sham nature. This view of the subject is no doubt essentially the correct one, when the garden is considered as the adjunct to the setting of the house; there is a tendency, however, to push it too far at present, the consequence of a natural reaction against the landscape-gardener's rule. It is possible to carry formality too far, which is certainly done in one or two of the gardens shown in the illustrations. Some of these, however, are charming. The same number contains an article on "Memories of Fontainebleau," by Mr. Grant Allen, with a profusion of finely-executed illustrations by Mr. W. Biscombe Gardner, which are alone well worth the shilling for the "extra" number. We may draw attention also to the article on "Old City Houses," written and illustrated by Mr. Philip Norman, and which includes a number of characteristic illustrations of doorways, courts, and internal decoration from old London houses in the City quarter. An illustrated article by Mrs. Strange Butson on "Fashions of the Nineteenth Century" has its artistic as well as its archæological and social interest. On the whole, the fashions of the present day do not come out badly in the comparative view; the worst point in them is the peaked shoulders.

In the *Nineteenth Century* Sir Herbert Maxwell has a pleasant article on "Gardens," more from the point of view of the gardener than from the standpoint of the artist or architect which is being so much revived to-day. He makes one suggestion at the close in which artists will concur: "Statuary is seldom used in the decoration of gardens now, yet of all places where it can be seen to advantage it is there. It gives a feeling of repose which is an indispensable quality in garden scenery, and in return receives tranquil attention, which can seldom be bestowed on it in public places."

We heard of a lady who expressed her appreciation of a visit to Rome in the words "Rome is very pleasant; one can get everywhere in tramcars." In the *National Review*, Signora L. Villari contrasts the "Impressions of New Rome" with her remembrance of the days when "midnight Rome was a place of darkness; occasional oil-lamps only intensified the gloom, or feebly revealed gruesome dust-heaps in the dim, empty streets." New Rome, in her eyes, has its advantages. "In spite of hideous modern buildings, the reckless destruction of beautiful things, and all the vulgarities of hasty civilisation, it is a grand city—the worthy city of young Italy. Progress may be crude, is often uncomfortable, generally ugly; but it has certain undeniable advantages." The article describes some of the new museums and the changes in old show-places, and a visit to the Villa d'Este, no longer open to the public. "From the moment of entering the gate by the cathedral, where a row of peasants leant resting in the shade, a glamour of sixteenth-century Italy was about us, the work-a-day world banished, forgotten! One modern association, however, joined in the charm; for in these halls the Abbé Liszt had lived and made music, and it seemed as though an echo of his mighty chords might still be lingering among the frescoed forms overhead. The endless rooms and fascinating little oratory nestled among them are all decorated by Zuccaro's brush, and in their cool dim space we forgot the heat without; so that it was a surprise to issue forth on terrace and loggia, and find the green world of Latium still bathed in a glory of light."

In the *Atlantic Monthly*, Mr. Charles H. Moore writes a thoughtful and discriminating criticism of "The Modern Art of Painting in

France," in which, while admitting that everywhere we find at present more or less effort to imitate or emulate French painting, the effect of which upon the world is at present universal, he comes to the conclusion, we fear with too much reason, that French art of to-day is not accomplishing all which the thorough training of French painters might have enabled them to accomplish, for want of a high intellectual ideal and a love of beauty. Impressionism Mr. Moore regards as only a passing phase, and, apart from that, he finds that French painting is marked by a want of poetic aim: "the higher training of the artistic taste and feelings finds little place in the curriculum of the Parisian atelier of to-day." It might, perhaps, be replied that the object of training is to teach the student the power of handling his materials, rather than the power of thinking. But the criticism embodied in the article is not without its truth, and calls attention to a side of the subject which is rather overlooked at present.

In the *Century*, Mr. Stillman's serial article on the Italian Old Masters deals with the great name of Raphael, who is illustrated in four very beautifully-executed engravings. Mr. Stillman characterises Raphael as having possessed an extraordinary and unique power of absorbing the ideas of other men, but admits that he presented these ideas with a power far surpassing that of his masters. To realise fully his power of design, Mr. Stillman says, with truth, we must study the drawings he made for his pictures. The article is discriminating, but does not do justice to the greatness of Raphael's genius. "The Golden Age of Pastel," by Elizabeth W. Champney, is an article on pastel-painting of the eighteenth century, with some interesting illustrations.

Harper devotes an article to the artistic treatment of the subject of "The Annunciation," with engravings from numerous ancient painters, and a frontispiece from Rossetti's namby-pamby picture now (rather unworthily) in the National Gallery. It is curious to compare the various phases of conventionality and sometimes of affectation with which painters have invested the subject. The same number contains an article by Mr. Walter Besant on "A Walk in Tudor London," given in the form of an interview with old Stow, who is represented as personally conducting the narrator through the London of the period. Stow showed him a good deal, and took him into the nave of old St. Paul's and showed him the crowd of people who used to do business there. The article is illustrated by reproductions from old woodcuts.

In *Scribner* is an article by Mr. Harold Frederic on "A Painter of Beautiful Dreams," which is not a bad description of the scope of the art of Mr. Albert Moore, who is the subject of the article. Mr. Frederic, however, makes this the occasion for an absurdly exaggerated attack on the English Royal Academy as an institution for the painting of "subject pictures" only, and on the other hand exaggerates Mr. Moore's position in claiming for his paintings an ideal beauty which is just what they are short of. They are exquisite conceptions in outward grace of form and colour, but they are strangely devoid of intellectual interest; the faces of his women are those of beautiful dolls without passion or speculation in them. That is surely not the highest type of painting. The article is illustrated by some engravings of works of Mr. Moore's said not to have been before published.

All the Year Round has a picturesquely-written article under the title "From Bloomsbury to Stratford," a description based on a tramcar expedition; and a short article giving some account of the various futile attempts, recorded in history, at "squaring the circle."

The *Leisure Hour* contains an interesting article by Mr. Stanley J. Weyman on "The Land of the Corsairs," illustrated by Edward Whymper. In "The Romance of Ancient Literature," Mr. W. Flinders Petrie gives some interesting extracts from Egyptian papyri, one of which refers to a will, older than the time of Abraham, made by "the assistant of the architect Ankhren, year 44, month Payni, day 19." This will, says Mr. Petrie, has every needful detail "as legally correct as could be wished," and he cites a lawyer as saying, "We could grant probate on it to-morrow." Mr. W. J. Gordon contributes an interesting article on that much-abused animal, the London cab-horse.——In the *Sunday at Home*, the Rev. Charles Merk continues his account of "The Religions of India, as illustrated in their Temples," and an illustration is given of the remarkable Temple of Gwalior.——The contents of the *Boy's Own Paper* include an article on "Bamboo-work," by W. Wheeler, and "Hints on Using Hand-cameras, and the Development of Instantaneous Pictures," by Reginald A. R. Bennett.——In the *Girl's Own Paper* is an article entitled "How French Girls are Employed," by Helen Zimmern. It gives some interesting particulars of the work done by girls in artistic and other occupations in France. The Christmas number of the same publication contains a good illustration of the picturesque clock-tower at Berne.

THE ARCHITECT AND HIS ARTISTS.

BY WILLIAM H. WHITE, F.R.I.B.A.

THE above is the title of the paper read before the Sheffield Society of Architects and Surveyors on Tuesday last by Mr. William H. White. In the course of some preliminary remarks, Mr. White observed that in treating the subject of his paper he used the word "artist" not in its modern exclusively æsthetic sense, but in its old meaning of a handicraftsman. Omitting the two preliminary paragraphs, we give the remainder of the paper nearly entire:—

"It may possibly be remembered that some seventeen years ago an attempt was made in the *Quarterly Review* to exalt the Mediæval workman at the expense of the architect. Mr. Emmett, an architect, justly distinguished for some excellent buildings, wrote a series of articles to show how merry it was in England five or six hundred years earlier, when there were no architects such as there are now, and when the era of professionalism had not even dawned. He told the British public that nowadays, 'instead of a class of noble working men, we have the architectural profession,—a number of soft-handed gentlemen.' The Reviewer's argument, which made a short sensation at the time it appeared, was that 'the old builder had not heard anything of the profession of art. He was a simple workman, and would make the plan, arrange the elevations, and be, in fact, the foreman of the work.' 'Workmen,' he said, 'should not merely do the work, but should make the entire design. An intelligent workman is far more to be trusted than any of our sketchers and schemers.' Then in his third article, he said: 'The inspired workman feels the necessary and for ever varying rules of art. The emancipated workman, gloriously impelled, must always be, and is, the only real hope of English architecture.' Mr. Emmett's opinions sound to me less extravagant than when I tried to refute them; and this is due, perhaps, to the tendency of recent years to render the pursuit of architecture more and more effeminate,—to open the portals of the Great Art, sole and indivisible, which Michelangelo practised, to some of those hosts of charming young ladies who adorn our art schools, and whose constant example, though it may refine the manners, seems to emasculate the intellect of the young æsthetic male.

In this direction several letters have appeared, during the current year, in the *Times*, and it may be assumed that the correspondence is not yet terminated. For my part, most of the letters caused me personally great perplexity. I took their paragraphs to pieces, dissected their sentences, read them upside down, sideways, and backwards, but always failed to grasp the whole meaning of their composition. All my doubts, however, were allayed when, on the 11th of last month, the *Times* published a letter from Mr. R. Norman Shaw, R.A., in which he explained, under the heading of 'Architecture,—a Profession or an Art?' the true meaning that he and his followers intended to convey in their correspondence on that subject. It is:—

That 'architecture is an art on precisely the same footing as painting and sculpture.'

That 'artistic qualities make a man an architect.'

That 'the scientific constructor already exists in the engineer, the business man in the surveyor or the commission agent.'

At length, therefore, the problem is solved, if not to the satisfaction of the whole body of architects, at least to that of the public. The latter are now authoritatively informed that if they want an 'artistic' work of architecture they must employ three men, instead of one, to advise them how to do it. That is to say: An employer being about to build a house, must, if he wish his house to be scientifically constructed as well as artistically ornamented, employ an engineer as well as an architect; and if he wish to have an account of the manner in which his money has been expended, he must further employ a surveyor. Of that there is no manner of doubt, if Mr. Norman Shaw's meaning can be deduced from his words. But which of the three is to be the architect of that house in the vulgar pounds-shillings-and-pence meaning of the term is not quite clear. Whether the surveyor, being a business man, shall employ the man of science and the man of artistic qualities, or whether the last-named shall employ the engineer and the surveyor, and pay for their services out of his own pocket or that of his employer, is not yet authoritatively stated by any exponent of the new architecture.

But what are these artistic qualities 'which really make the architect?' How are they acquired? And when artistic qualities are acquired, how are we to know that they are the really true particular qualities to which reference is made as really making the architect? At present we are only treated, in respect of them, with negatives. They cannot be tested, it is alleged, by examination, and, therefore, they cannot be acquired by education. . . . . If, moreover, 'architecture is an art on precisely the same footing as painting and sculpture,' the aspirations of a modern master need rise no higher than the acquisition of a good place in an exhibition of Fine Arts or any other market for the sale of painters' and sculptors' wares. He has but to frame his sketches, as painters do, in imitation gold; and if he sometimes choose to work out his ideas into the form of a model, he can plant it on boxes covered with red cloth, as sculptors do. If architecture is only an art like modern painting, the new architect, however gifted, is nothing more than a draughtsman; and if it is only an art like modern sculpture, this draughtsman, however gifted, is already eclipsed by the accomplished artists who 'build out' scenes of architectural beauty and magnificence, full size, in operas at the Savoy, or pantomimes at Drury Lane.

It strikes me that the inspired working-man of the year 1874, whom a *Quarterly* Reviewer served up for our enjoyment, is likely to prove less indigestible with the robust manhood of the British Empire than the inspired draughtsman whom a restricted circle of mutual admirers regard as the only possible architect for the last years of the decaying century. I confess that I prefer, as a product of imagination bent on conceiving a new architect, the masculine worker with solid materials, to the soft-handed artist on paper.

An Opinion of Sir G. G. Scott, R.A.

Before leaving this part of my subject it may be interesting to quote a letter written to me in December, 1874, by the late Sir Gilbert Scott:—'If,' said he, referring to the *Quarterly* Reviewer's articles, 'in the Middle Ages, in the countries on this side of the Alps, workmen, clerks of the works, builders, masons, and architects were jumbled together, it followed that the study of architecture was followed up by *all* of them. If at the same and somewhat later times, on the other side of the Alps, the jumble was rather between architects, sculptors, painters, and workers in mosaic, it equally follows that *all* of these classes studied architecture. We know this by the results, which *speak for themselves*. If, however, in our own day, we know that *neither* workmen, clerks of the works, builders, masons, sculptors, nor painters study architecture, and *know by the results* what a hash they make of it when they attempt to practise it, should we not be *fools* to place a subject in their hands knowing them to be ignorant of it, merely because some four or five centuries back a contrary practice prevailed? True, there are some few exceptions . . . . but as a rule we might as well employ barbers for surgeons, or clergymen for Lord Chancellors, as follow the advice of the *Quarterly* Reviewer, in digging up from its grave an obsolete custom such as he advocates. On the other hand, the more he can do to render our architects first masters of *their own* art, which they very, very often *are not:* and, secondly, masters more or less of the collateral and practical arts on which the merits of the work so much depend, the more heartily would I bid him *God speed;*' The italics are Sir Gilbert's own, and characteristic of all his manuscripts. His contention obviously is that in the great periods of architectonic progress, the artist or workman who aspired to take part in the execution of a great build

ing had to learn architecture, which thus not only theoretically included within itself the attendant arts of painting and sculpture, but used them both, to explain the purposes for which a building was erected; in other words, as voices to tell its story to the population of the time and to posterity. Recent dogmas of individualism or specialism must be dismissed from minds desirous of understanding how some of the old buildings most venerated at the present day were designed and carried out. If in the minor arts it was the system of pupilage which produced results that are now admired, and foolishly thought to be unsurpassable, it was not the same divided system as that now in vogue. It was not the grouping of pupils around a specialist, to study theoretically the speciality he practises, but the study by all young artists of the one grand art, architecture, on the buildings themselves, in daily converse with the executants, under the eye of the master or his elder disciples,—a system of which only a rudiment remains in England, but which still exists in France, though in a modified and restricted form. . . . .

France, moreover, has preserved the custom of continuity among the craftsmen composing the various building arts or trades; and thus to some extent insured herself against such strikes as we now witness in England. The *apprenti* and the *compagnon*, if he have wit and courage enough, can rise, and does rise as a natural sequence, to be a master, and enter into contracts with employers for the execution of works in his particular trade. No such possibility is open in this country to the workman in any of the ordinary building arts; here he is the dependent, hopelessly bereft of the emulation necessary to all progress, of the capitalist master, whose only necessary qualifications for the position he holds are business aptitude and a certain power of organisation. The capitalist is the acknowledged master of mason, bricklayer, carpenter, smith, slater, plasterer, and every other worker in the building trade, without having served an apprenticeship to any one of them, and without of necessity being acquainted with even the remotest detail of building construction. His dependents,—the workmen whom he employs,—treat him, not as a master from whom to learn and improve on their work, but as a sweater of whom it is quite fair to take advantage, whenever possible. The only palliation of the system of general contract, as we now have it in England, is that the capitalist contractor shall have been educated as an architect, and there are a few instances in which this already occurs. In fact, the late Edward Barry, R.A., once told me that in his opinion an architect with capital could not do better than become a general contractor, and execute as well as design any buildings intrusted to him. As it is, many contractors employ architects and draughtsmen in their offices, to the detriment of the architectural profession; and there is every prospect, in my opinion, of a serious development of the practice. Under actual circumstances in England, the power and universality of the architect are so diminished by the regular presence on every building of the capitalist master who follows the course of the work, while the architect is represented there only by his drawings and a half-educated clerk of the works, that I doubt much whether the trouble saved to the architect by the employment of a general contractor compensates him for the loss of influence he suffers therefrom in the direction of the several crafts or trades. In Paris, and France generally, the architect is the sole and supreme master of the work, and his relations with the master-workmen are constant and direct. He makes his contracts, not with one capitalist, but with a dozen master-tradesmen, who each work under his direction, and who look to him only for orders to fix materials and assist each other at the several stages of the work. This fact renders it essential for an architect in France to be a constant visitor on the works with the superintendence of which he is intrusted; and I have known architects who, if their buildings were in Paris, visited them daily, and, if at a moderate distance from the capital, twice or three times a week. The first time I spoke to Viollet-le-Duc was in 1860, on the works at Notre Dame, which he then visited daily at 5 p.m.; and the last time I spoke to Louis Duc was in 1878, on the works of the Palais de Justice, where he was daily engaged with his assistant architects and draughtsmen. The visit of a French architect to a building in course of erection under his orders is a most characteristic ceremony, and not confined to the largest works. He is followed throughout by the masters of each trade engaged, by his assistant-architect, who probably lives at the works, and by the principal foremen. The consequence of this system is that the business of architecture is more equally distributed in France than it is in England: the architect takes less work, and moreover, makes less out of it, for it costs less in execution. Obviously, there are fewer rich architects in Paris than in London, but I think that the average income of architects in the French capital is larger than it is in the English one. At the same time, his honorarium is less, and it is divided as follows:—

	Per cent.
Preparation of the design, specifications, and estimates	1½
Conduct of the works	1½
Verification and settling of the accounts	2

Thus it will be seen that the design is authoritatively valued in a great artistic country like France, at less than a third of the five per cent. commission paid to an architect both there and in England; and the Frenchman, in addition, has to pay his own surveyor or *vérificateur* for checking the measurements made by the contractor's *métreur*, whose recognised charge is one to one and a half per cent., which last charge is included in the contractor's accounts. I have often thought that if the British public were only as shrewd as foreigners think they are, they would pay the "artist"—the new architect of whom we have heard—two per cent. for his work, instead of the five which he remorselessly exacts; and possibly then there would be less said about the art, to the exclusion of the science and business, of architecture than there is at present. The French, however, in dividing the duties of an architect into three parts, and paying for them accordingly, simply follow the traditions of the Renaissance. There is an amusing plate in Philibert de l'Orme's "Architecture," which used to delight William Burgess, because the architect was therein portrayed with three eyes, four ears, and four hands, to show that he had much to do in his time, if he wished to succeed in the sciences required of him.

English General Contracts and Special Provisions.

While on the subject of the dangers which attend the present development of the system of general contract, it may be well to recognise signs and events which illustrate some of its disadvantages. At the present moment there is a cry, no doubt of affectation, but still likely to culminate in a practical result, for the union of the arts; and it is certain that there is a demand for better work, and of a higher character, than can be obtained from the hands of ordinary workmen in the employ of a general contractor, who, by the way, is not overpleased with the presence of other contractors on the same building. He has therefore to be treated gently; and the architect, instead of entering directly into a contract with the specialists now rising in every direction,—some of them bearing the duplicated title of artist-workmen,—orders a round sum to be provided in the general contract for special works which he will not entrust to the general contractor. This is undoubtedly due to his desire to obtain direct control over the specialist workman, and at the same time preserve to the client the advantages thought to be derived from the employment of a general contractor. Such provisions, to a moderate extent, are very properly included in contracts; but there are cases, especially in recent times, of "provisions" attaining to almost scandalous amounts. Let us, therefore, see how they work out, in the pecuniary interests, say, of the client. A provision of 500*l.* is included in a general contract for a specialist's work, and here is the result:—

Provisional amount	£500	0	0
General contractor's profits, at, say, 15 per cent....	75	0	0
Quantity surveyor's commission on the above two items, say, at 2½ per cent.	14	7	6
Total of general contractor's account ...	589	7	6
Architect's honorarium on the above at 5 per cent., say...	29	10	0
Grand total	£618	17	6

Thus, for this one provision of 500*l.*, the quantity-surveyor and the general contracto may receive nearly 90*l.* for doing next to nothing. Multiply this by the inclusion of five or six such provisions in a general contract, and the profits paid for little or no work become enormous. Whereas, were the architect to arrange with a craftsman, in entire independence of any general contractor, for goods to the value of 500*l.*, he might save his client nearly 94*l.*, and still receive 25*l.* for his design and superintendence of the work, and his final revision of the craftsman's account.

The general contract system, which was introduced by the Government early in the century, has largely aided the development of manufacturers' discounts,—sometimes ludicrous in their proportions,—from which the contractor derives his wealth; and not, as his men often say, from sweating them. The experience of the great stores and supply associations in London shows that what the old-fashioned retail tradesman in a good quarter of the town considered a reasonable profit was often a huge tax upon the pockets of the public; and when one reflects that these stores, though selling at very low rates, pay their shareholders large dividends, it is possible that at no distant date building materials may be offered for sale and purchased in a similar fashion. By such means, and such means only, I think, can the true workman regain the position from which he has been ousted by the capitalist general contractor, and to which he can never return while that personage dominates, as he does in London, the entire *corps de bâtiment*. That the general contractor can be dispensed with in certain cases one has only to examine the Hôtel Métropole at Brighton, and other buildings of like importance in London; and that he may one day be dispensed with altogether I fervently hope, not only for the sake of the architect, and the artists whom it ought to be the latter's function to direct, but also for the arts which, from the highest to the lowest, in every ancient monument extant, admit their allegiance to architecture. There is danger, of course, in any reversion to the old custom of an architect, as the agent of his employer, purchasing materials and employing labour. Thereby the abuses, against which Professor Donaldson and others contended, and to destroy which they founded the Royal Institute of British Architects, might be revived. Already, in some quarters, there is a tendency to 'cut architecture and go in for art,' as I have heard it called, which I have invariably found to mean that more could be made by an artist than the 5 or 10 per cent. that an architect usually charges. When you can sell your design for a stained-glass window or a piece of 'art furniture' for a round sum to a manufacturing company; when, as a shareholder of the said company, you can get a round dividend; and when, being entrusted with the execution of a church or chapel, you can introduce the said glass or the said art furniture into the said church or chapel, and be paid an architect's commission for the same,—I say, if such things be, and I am unable to affirm that they are, art is a most paying concern, I had almost said profession. But how long will such duplication or triplication of payments last? How many can hope long to participate in them? Nevertheless, care must be taken that the very laudable desire for the unity of the arts, now in the ascendant, do not result in a commercial union. It is only logical to assume that the weakening of what is designated 'professionalism' may tend to its deplacement by something that is unprofessional.

The Guild versus *the Academy*.

I believe it has been established beyond doubt that the Mediæval guilds in their corporate capacity did not teach; they merely examined. The technical education of those days was an affair of master and apprentice. Membership of a guild or corporation implied that apprenticeship had been served for what would now be called a long period, and an examination satisfactorily passed. The member, or master, entered into certain obligations and submitted to certain rules of discipline, which were alike an honour to him and a protection to the public. He was allowed to take a certain number of pupils, who, in due course, became masters and members of the guild; and this went on from generation to generation. But these customs, which in the sixteenth century were doubtless thought old-fashioned, were largely interfered with by the extraordinary influx of foreign workmen from Italy and France, attracted by the wealth (comparatively regarded) of this country and its desire

for improvement in the arts. But so great appears to have been the demoralisation that, in 1562, the fifth year of the reign of Elizabeth, an Act was passed which compelled every lad wishing to practise a trade to serve a master for seven years before he could commence as a master, and the Act was only repealed in 1814, at the instance mainly of the engineers. After this, any trade could be taken up by any person without having served an apprenticeship; and, says Mr. Wyatt Papworth, from whom I have quoted, this led to 'the subsequent degradation in trade and manufactures, and to a like degree in art.' It was only after the disintegration of the guilds, and prior to the foundation of Academies, that a selected few were dubbed, by the personal favour of monarchs and reigning ducks, Ducal engineers, Ducal painters, Architects and Sculptors of the King, and permitted to use other high-sounding titles of a like kind. It was such men who, in Paris in the time of Louis XIV., formed the Academy of Painters and Sculptors, and the Academy of Architecture, both of which merged into the Academy of Fine Arts, and were resuscitated as part of the Institut de France by Louis XVIII. in 1816.

The main principle of the Mediæval guild was the consolidation of all workers in a particular art or mystery (which means *mestier*, or trade), as a corporate body; and these professed practitioners enjoyed equality among themselves. The main principle of the Academy, as it has come down to us, from Italy through France, is the selection of a few who by personal favour are placed above their fellows in the same art, and who, as members of the Academy, are absolutely free from all professional discipline whatever. The Mediæval principle reflected a spirit of true equality; the modern academic spirit is of the very opposite description, and totally opposed to the great doctrine of modern legislation which in this country is peculiar to no one political party,—the security of the greatest happiness of the greatest number.

In France, the result of the system of placing a few architects on an eminence of social esteem by the favour of a coterie,—or, to be precise, by the personal favour of the majority of those composing it,—is less injurious to the profession at large than in England. The Architect-Academicians across the Channel are almost invariably chosen from among those who have been specially trained,—who have devoted long years of their early career to special studies, who have been examined not once, but several times, and who commence their professional lives on buildings in progress; and often at an age when many Englishmen of ability fancy themselves failures if they are not driving a remunerative practice. Even the most distinguished travelling student, after four years' study in Italy and Greece, comes back to Paris, at the age, perhaps, of thirty, to find himself appointed to a place on a public building, the equivalent of which in this country would be that of an assistant to a clerk of the works. From that position he rises to be a chief inspector, afterwards an assistant-architect; and then, as time flows on, sometimes architect to the building.

In England, the genius of the people, throughout all the social strata is commercial; and commerce without the grain of pluck which renders risky speculation sometimes a success, and always seductive, is a poor wee thing which no more conquers position than an army, always on the defensive, conquers a new province. Englishmen believe in success, and admire the man who gets placed above his fellows by audacity, whether speculative or competitive, or by genius, as the case may be. They like to have, not always the best of everything, but what is thought at the time to be the best; and as the lives of most men in this country are busy ones, they have not time to think for themselves in any matters with which they are not personally identified. Hence they are very much obliged to the Royal Academy of Painting, Sculpture, and Designs for publicly informing them of the names of the painters and sculptors whose works ought to be admired, and of the names of the architects who ought to be employed, not only in London, but in every part of the United Kingdom. Hence the academic advertisement of a few men means what most Englishmen prize,—a good income; and it is not surprising that among the elect the watchword should be,—'The fewer the better.' In this assumption I am supported by the remembrance of a conversation I once had with a certain 'artist architect,' who advanced a proposition which induced me to say that if his view were accepted in its integrity, the profession of British Architects would be reduced to some fifty persons. 'Exactly so,' replied this philosopher, 'and then So-and-so' [naming a Royal Academician] 'would join us!' The reply is unanswerable, and in it lies concealed much of the thought and intention of those leaders who incite their followers to denounce what they call professionalism. The leading artists of the Royal Academy and those who seek to be members thereof do not want to be hustled in the hurry of existence by a scientifically educated body of professional architects.

The influence of an Academy, especially when subventioned by the State, is always largely enhanced by the fact that it is situated in the capital city, Imperial, Royal, or Republican, as the case may be; and as all such centres possess an extraordinary attraction for the youth of a country, as success in the provinces is always burning to repeat itself in the metropolis, great capitals swell every year in dimensions. A lifelong struggle for work is deemed preferable by a great mass of Englishmen to a modest practice in a provincial city, principally because the best men of a nation are supposed to collect in its metropolitan centre; and if this superstition hold good generally, the elect of the best men,—the chosen few, say, of a great profession,—must hold a position not less advantageous to their own interests than prejudicial to those of their brethren in the same capital. It follows, therefore, that that position must be still more prejudicial to the interests of the whole body of the profession throughout the entire kingdom. Indeed, I shall divulge no secret if I venture to state my belief that London, which grows larger every day, is not behind other imperial capitals in its willingness to do the whole work of the empire. London, in fact, is equally prepared to do the work of a large part of the whole world, if the world will only let it; and I am quite sure, as far as architecture goes, that London is prepared to design and erect buildings all over these islands and far beyond the limits of these shores, even though the architects resident in the respective localities affected may raise a sentimental objection. It is certain and inevitable that London does and will continue to do for the whole non-metropolitan area of this country more than all the cities and towns included therein do or have ever done for London, and I am doubtful if the provinces can at present offer any effectual opposition to such a state of things. But it is clear to my mind that London has no more right to build the chief public monuments of a provincial capital than a State Department of Works has to erect the chief public buildings of London. Happily there has been an improvement in this latter particular during the last few years, and words of wisdom under this head have been recently heard at Whitehall. Who knows whether the advance of education in provincial centres,—the advance, I mean, of architectural education,—may not one day assist in the erection of local barriers to metropolitan aggression? Who knows whether the Sheffield Society of Architects and Surveyors, by the adoption of a curriculum and the conduct of a studio to guide the young artists of Sheffield in their study of architecture, may not one day be able to show that a result so desirable for local enterprise was attained partly by its foresight and wise endeavour?

Academic 'Stars'? or a 'Profession' of Average Ability.

It will be admitted, I think, by men of the world that there are excellent reasons for preferring the principle of the Mediæval guild to that of the modern academy. The political prosperity of a state is not to be measured by the existence of a despotic monarch, with a few highly-placed nobles and a disorganised population of ignorant and uncultivated subjects; the wealth of a state is not to be measured by the existence of a few millionaires in the midst of a population of poor and needy persons. The condition of the Court and the condition of the people towards the end of the reign of Louis XIV. and after his death led more than one observant traveller in France to predict the catastrophe that followed; and if an infinitely smaller illustration of my argument may be permitted, the stage on which the events of life and of the world are portrayed was in a very debased condition when, less than thirty years ago, a few 'stars' declaimed a play of Shakespeare or Sheridan in the midst of a group of nonentities; when a London star would 'boss' a provincial company, and be received with applause in every part of the country. Happily, that state of things is improved. At the present hour, it is possible to enjoy comedy all over England, performed by actors and actresses of uniform general ability. At the best English theatres the company is usually so good that the star is barely recognised; while at that theatre which is supported by the French Government in order to afford an example of perfection in the histrionic art the star is still unknown. In like manner, when the star is no longer sought for upon the boards of the architectural stage, when average uniform ability,—and that not of a low order,—is necessary to every actor upon it, the British public will be the gainers, and in time appreciate the art. And the general body of actors will also gain, though one or two may make less money than they did in the old 'starring' days.

In France, the professional star is of an order very different from those similarly placed in this country. The French Architect-Academicians design and personally superintend the execution of public buildings, or they hold the post of Inspectors-General of National Monuments, of Diocesan edifices, or State Schools, or Prisons, &c., but they seldom accept private practice; and their annual incomes are often less than those of the ordinary practitioner. So recognised, however, is their position that the post of President of the Central Society of the Architects of France is allowed to be held only by one of the eight Architect-Academicians; and no member of the Society, except he be of the Academy, can rise higher than Vice-President. Yet no one grudges the Academicians their well-earned distinctions, and no one fails to pay them the respectful homage which is their due. Very different is the position of an architect-member of the Royal Academy in London. There is no need for him to earn by any special training the honour of election; there is no standard of excellence, scientific or artistic, except perhaps the fashion of the decade and the personal esteem of those in power, to which he need conform; and his chief obligation is to exhibit sketches of his works in the Academy 'Architectural Room.'

Architectural Exhibitions in London and Paris.

The wall-space of that room, which is presumedly for all the architects of England, is much less than is devoted to the works of some three or four distinguished travelling students in Paris at international exhibitions. Hence, perhaps, the reason why such drawings as show how buildings are constructed find no place in the exhibitions of the Royal Academy of London. 'Where are your plans and sections?' said the French architects to me at the Exhibition of 1889; 'what are your materials, of what is your construction, how do your towers and domes stand, and on what?' The same thing was asked me at the International Exhibition of 1867, and I was then similarly powerless to reply. Frenchmen admire the pretty sketches of English architects and the picturesque designs represented thereon, but they are not complimented by the inference that working drawings and constructional details are things of little interest to them. Indeed, the one or two Frenchmen who were in London when an exhibition of the working plans, sections, and elevations of buildings, executed by Burges and Street, was held at the Royal Institute of British Architects, took back to France a far higher appreciation of English work than they ever derived from the collection of sketches sent over to Paris in 1867 and 1878. But by these pretty sketches the British public, whose tastes it is the custom of British artists to condemn, are fascinated; and from them the patriotic and wealthy Philistine before mentioned often makes his choice of an architect in precisely the same fashion as he buys a picture which is hung 'on the line,' or orders a conspicuously-placed model in clay to be converted into sculpture by one of the modeller's assistants. . . .

What, in fine, is 'architectural art' in its modern æsthetic sense? Let us test it by the experience of the present happy reign of Queen Victoria; for even those who are but approaching their half-century can offer a reply to this

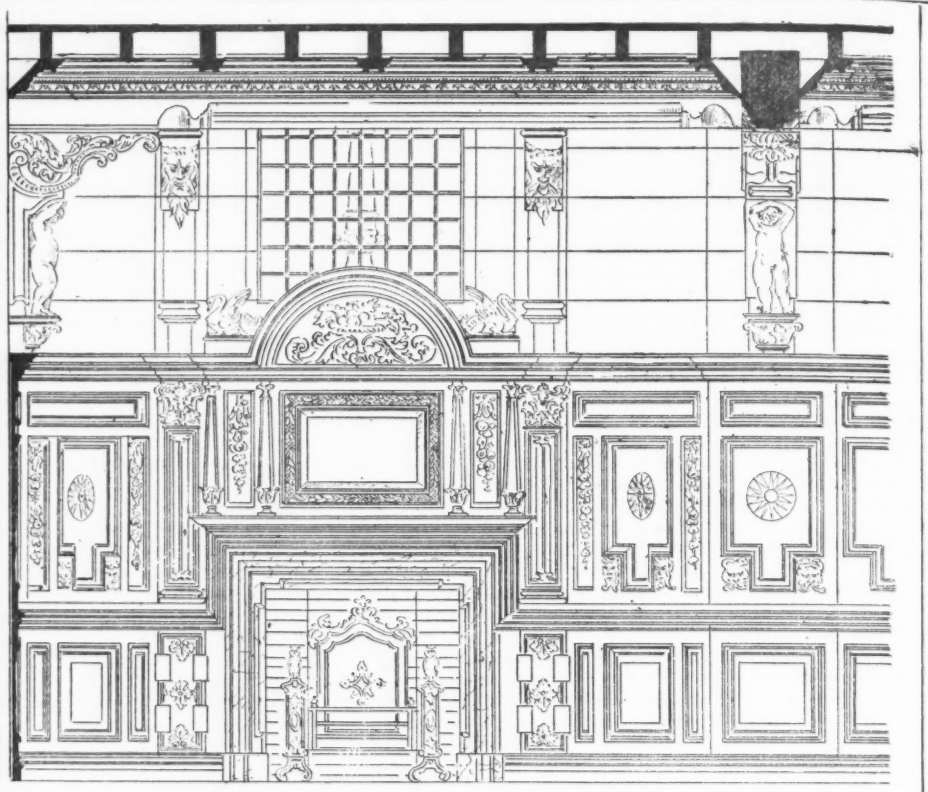
crucial question. When, about a generation ago, they were beginning their professional lives, there existed among British architects a supreme, an irrepressible contempt for the artistic character of the works executed by their fathers and grandfathers; and at the present time I encounter everywhere signs of doubt and disappointment respecting the artistic merits of works designed and executed less than fifteen and thirty years ago,—during a period, in fact, when artists have been more or less confident that the right thing was being achieved. What is the obvious inference?

It was a pretty poetical idea of the ancients to represent the Temple of Nemesis as always open during a Triumph; and the new architect, in the present hour of his newest success, may even now, perhaps, be haunted with the warning words poured into his ear by some miserable cynic: As your fathers and grandfathers despised the works of their predecessors, as you contemn the works of your fathers and grandfathers, so will your works be treated by the sons and grandsons who outlive you. But the see-saw may ultimately become tiresome, and his wiser brethren will perhaps seek safety in a return to principles, the nearly-forgotten principles which Pugin, Viollet-le-Duc, and Burges advocated, — principles which were identical in both the great periods of true and progressive architecture, the period of which the ruined Parthenon is the chief example, and the period of the domination over Western Europe of the University of Cluny. It was the intimate knowledge of this truth which induced William Burges to tell his brethren in this country that they would find salvation nowhere out of the thirteenth century,—meaning thereby, outside the artistic principles which governed the architecture of that great epoch. It is not proved, to the satisfaction of the intellectual and thoughtful minority of Englishmen, that æsthetic art alone, however good, makes architecture good. The short experience of half a century suffices to show that the architectural art which a comparatively recent generation believed to be good, the succeeding generation believed to be bad; and architectural art of the modern type applied to a building seems to be neither tangible nor capable of progressive development. Scientifically and artistically constructed buildings are what the educated public want, and if they are sometimes hard upon an architect, it is because of his bad building, not of his bad art. I am sorry thus to dissociate building from art, and can only offer in excuse the present pernicious application of the ancient word 'art' to something æthereal in the domain of architecture. With the followers of Mr. Norman Shaw, art appears to be a sentiment, a feeling, or a fancy, derivable from a fund of æstheticism in their leader's possession; and the leader is apparently unconscious that the promissory notes now drawn upon it may be dishonoured at the first radical change of fashion, or the next reversal, in the lifetime of half a generation, of every artistic principle that the preceding half held to be true and irrefutable."

COMPETITIONS.

Fine Art Galleries, Glasgow. — The *Glasgow Herald* says that sixty sets of plans for the proposed Art and Music Galleries in Kelvingrove Park have been sent in by competitors throughout the kingdom, and are now hung in the upper saloons in the City Chambers. Mr. Waterhouse is the assessor, and has been engaged this week in looking over the designs, with the view of selecting the six designs which will enter the final competition.

Municipal Buildings, Bath.—The *Bath Chronicle* of Thursday, the 10th inst., says that at the meeting of the Town Council to be held on Friday, the 11th, a report from the Municipal Buildings Committee will be presented submitting the report of the assessor, Mr. William Young, on the nineteen sets of designs submitted. The Committee recommend that they be authorised to arrange terms with the author of the plan bearing the motto "Adelphi" (which was recommended by Mr. Young for the first premium, as stated in the *Builder* for November 28, p. 405 *ante*) for his undertaking the construction of the building, subject to slight modifications in internal arrangement and external elevation as suggested by Mr. Young's report. The estimated cost of the building is 22,500*l*. The envelopes containing the names of competitors have not yet been opened.



"Woodcroft," Leek: Elevation of part of Billiard-room.

Illustrations.

"WOODCROFT," LEEK.

THE existing part of the house,—having no features of interest externally,—is to have bays and ramped gables and a pillared portico added, to harmonise with the new work.

The new part of the house is faced with Fareham and Woodville thin red sand-stocks, and the stone used is Sheen. The roof-covering will be yellow Broseley tiles, or Bingley stone slates of varying tones of colour, except the tower, which will be lead or copper.

The billiard-room walls are wainscotted in oak in the lower part, and above are faced with Farleigh Down Bath-stone, which may ultimately be treated as bas-relief panels, illustrating Mr. Morris's legend of "The Glittering Plain," with the figures of "Hallblithe" and "Hostage" in glass in the end window.

The ceiling of this room has teak-moulded beams, carrying the floor above, and resting on large oak corbels (descending to the wainscotting) carved as cupid-caryatides. The soffits of alternate joists are exposed, and the spaces panelled by corresponding oak cross-pieces, the panels being filled by fibrous plaster slabs, with raised pateræ of conventional foliage of square outline.

Messrs. W. Sugden & Son, Leek, are the architects. The proprietor's workmen are carrying out the whole of the work excepting the heating, &c. (done by Messrs. Haden & Son), and the plumbing, &c. (done by Mr. C. Phillips).

DESIGN FOR WHITEFIELD CHAPEL AND HALL.

We give illustrations of the design by Mr. J. M. Brydon, which gained the second premium in this competition, and we cannot do better now than quote Professor Roger Smith's remarks on it in his report:—

"This design," said the Professor, "is illustrated by the most artistic drawings submitted by any of the architects, and its interior, at any rate, is the most artistic piece of design shown. The two main parts of the building form two blocks, with staircases between. The chapel is almost a square, with the corners slightly cut off, measuring 85 ft. by 73 ft. The seats are amphitheatrical in arrangement, and the gallery follows the same lines. There is no recess for the pulpit. The clearstory arrangement is very prominent; it consists of a central hexagon with arches springing from piers, and carrying a very considerable dome. The hall is a rectangle measuring 45 ft. by 99 ft. The approach and the ground-floor rooms are convenient, and there are four offices to let. It will be noticed that the square shape of the plan brings every person within a moderate distance of the platform, and also assists materially in the lighting of the chapel. The schools are roomy, and on the whole well lighted. The accommodation in the chapel is over the prescribed number, my estimate is 1,069 seats on the floor, and 575 in the gallery. The seating is particularly well arranged. The general arrangements are simple and suitable, but I think the staircases placed between the hall and chapel would have to be extended were this design erected, as the space at the main entrance to the chapel is cramped." After some further criticism the Professor concludes by remarking that "the design is one which reflects the greatest credit on the designer and draughtsman." The views are from drawings in this year's Royal Academy Exhibition.

"MONTROSE," STANMORE PARK ESTATE.

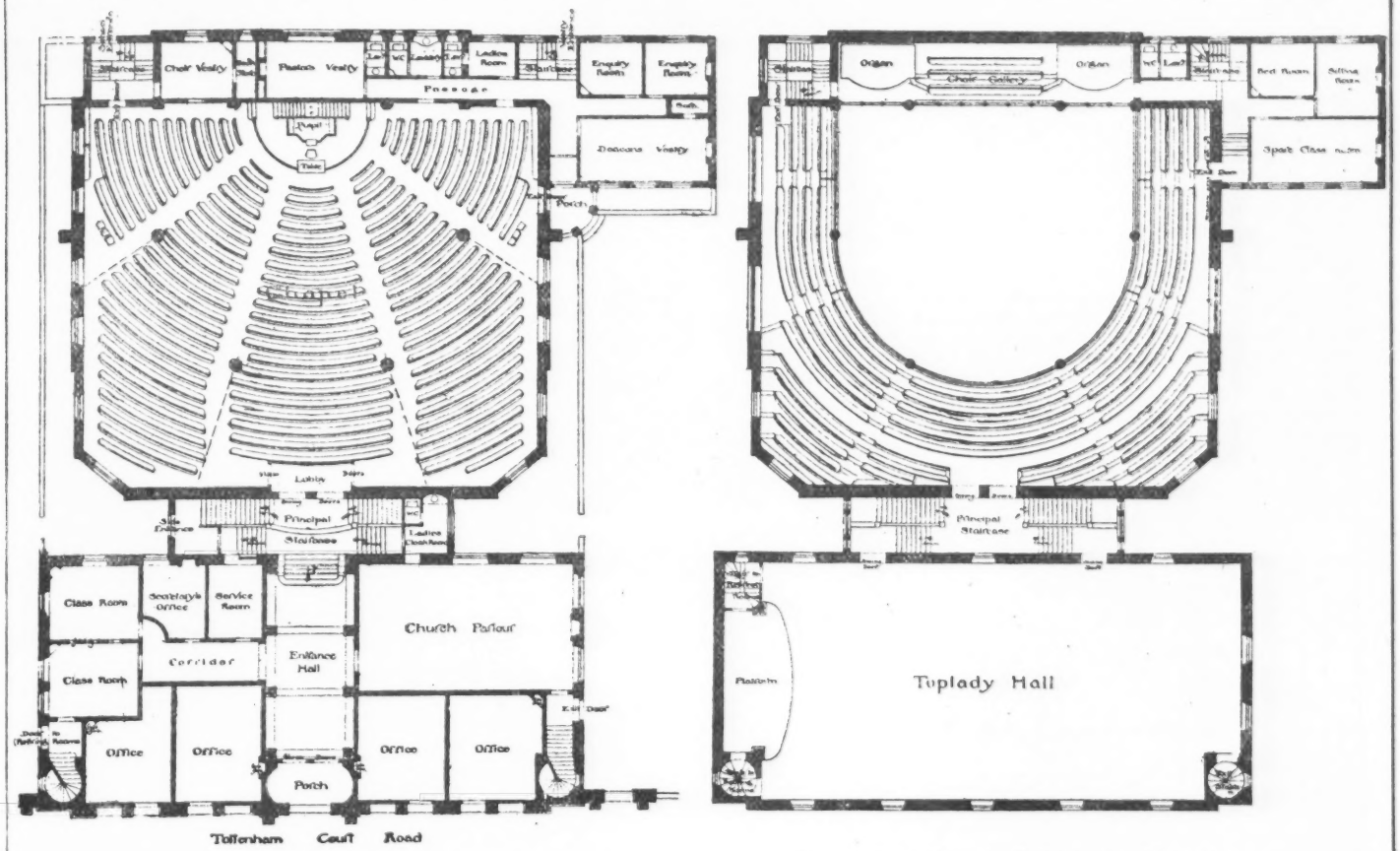
This drawing, which represents a fairly picturesque type of suburban house, was accepted by the Royal Academy for exhibition in the Architectural Room this year. The architects are Messrs. Goddard, Paget, & Goddard, of Leicester.

BRASS OF LAWRENCE SEYMOUR, HIGHAM FERRERS, NORTHANTS.

The figure, which is vested in the Eucharistic vestments, stands on two dogs fighting. This is somewhat similar to that seen in the Delamare brass at St. Albans. On the breast of the figure are the words, "Fili dei miserere mei." Over the figure is an ogee canopy, and inscribed, "Suscipeat me Christus qui vocavit me, et in . . . . Abrahe angeli deducant me." Above the ogee canopy is a super-canopy, consisting of five arched compartments. The centre compartment contains the Representation of the Soul, held in a cloth by two angels, above which is the First Person of the Holy Trinity holding an orb. On the right are St. Peter and St. Andrew, and on the left St. Paul and St. Thomas. A battlemented cornice completes the composition.

The side canopies are connected by small buttresses to the super-canopy, and also by a small moulded bracket now lost. In the uppermost compartment, on the right, is an angel writing, and beneath is the symbol of St. John. In the second, an angel with a scroll; in the third, St. John the Baptist; in the fourth, St. Stephen; in the fifth, a monk with a pastoral staff; in the sixth, an angel writing with the symbol of St. Luke under.

On the left side the top and bottom figures only remain. These consist of angels' figures



Design for Whitefield Chapel and Hall.

with the symbols of St. Mark and St. Matthew. The last-named has been removed and placed in a line with the fourth compartment on the opposite side, but this is clearly wrong. In Hudson's "Brasses of Northants" it is placed at the foot of the slab, in which position it will be seen in the illustration.

At the foot, and connecting the side canopies, is this inscription:—

Hic jacet laurce' de Sco' Mauro qudā
Rector isti' ecie cui aie ppiciet deus.

ANDREW OLIVER.

DRAINAGE OF TOWN HOUSES:

SOCIETY OF ENGINEERS.

AT a meeting of the Society of Engineers, held at the Town Hall, Westminster, on Monday evening last, December 7, 1891, Mr. W. N. Colam, President, in the chair, a paper was read by Mr. G. M. Lawford, on "The Drainage of Town Houses."

After alluding briefly to some of the now well-known defects in the earlier attempts at house-drainage, the objects to be attained in carrying out a perfect system of drainage, with special reference to drains passing under houses, were stated to be as follows:—1. The primary disconnexion of the house drain from the main sewer. 2. The thorough ventilation of the entire system. 3. The secondary disconnexion of the rain and waste water pipes from the house drain. 4. The immediate and absolute removal of all matters discharged into the drain from any source whatever, and lastly, 5. The construction of the entire system in such a manner as to prevent foul gases or currents of polluted air from entering the house, and of such materials as to preclude the possibility of the leakage or escape of both gases and liquids.

The meaning of the terms "disconnexion" and "trap" was then explained, and descriptions of the different forms of disconnexion were given, showing the usual type of manhole with intercepting trap and air inlet. With regard to the ventilation of drains, attention was drawn to the fact that in order to create and maintain constant circulation an inlet is necessary as well as an outlet, the position of each being so arranged as to produce a current of air throughout the entire system.

The question of trap ventilation and syphonage was gone into, reference being made to the necessity for ventilating the traps on a horizontal tier of appliances, such as a range of lavatories, as well as those on a vertical tier, such as a soil-pipe. The separate trapping of every appliance was also advocated. The treatment of waste-pipes and the different forms of gullies were taken conjointly, the practice of doubly disconnecting the former by means of hopper heads being strongly condemned.

The three essential factors for facilitating the immediate removal of all matters discharged into the drain were stated to be the size and inclination of the latter, and the water supply. Instances were given showing the sizes of drains in relation to the greatest possible volume discharged into them, and the advantages of using 4 in. drains were described and advocated. The utilisation of automatic flushing for the removal of grease in preference to its collection by grease-traps was also considered under this heading. The water supply and service was touched on briefly, special attention being given to the question of separate cisterns for closets and for domestic purposes, the author maintaining, in spite of the popular belief to the contrary, that, under the special circumstances described in detail, drinking water could be used with safety from a cistern supplying a closet.

The construction of the entire system in such a manner as to prevent foul gases or currents of polluted air from entering the house was described as embodying the various points advocated in the paper, namely, — thorough disconnexion and ventilation, treatment of waste-pipes as disconnected soil-pipes; separate trapping for every appliance; 4-in. drains combined with automatic flushing and a good supply of water.

The question of the best materials for the prevention or escape of gases and liquids was treated under the three sub-headings of (1) the underground drains; (2) the rain-water, soil, and waste-pipes; and (3) the appliances. Regarding the first-mentioned, a comparison was given between stoneware and iron, the latter, though undoubtedly more expensive, being given the preference on account of the greater safety obtained by its use, the smaller number of joints required, and the certainty of sound joints between lead soil-pipes and the underground drain. The ordinary painted rain-water pipe was described as a nuisance, owing to the certainty of its choking sooner or later from internal rust; and galvanised pipes were stated to be the best for rain-water, and lead for soil and waste-pipes.

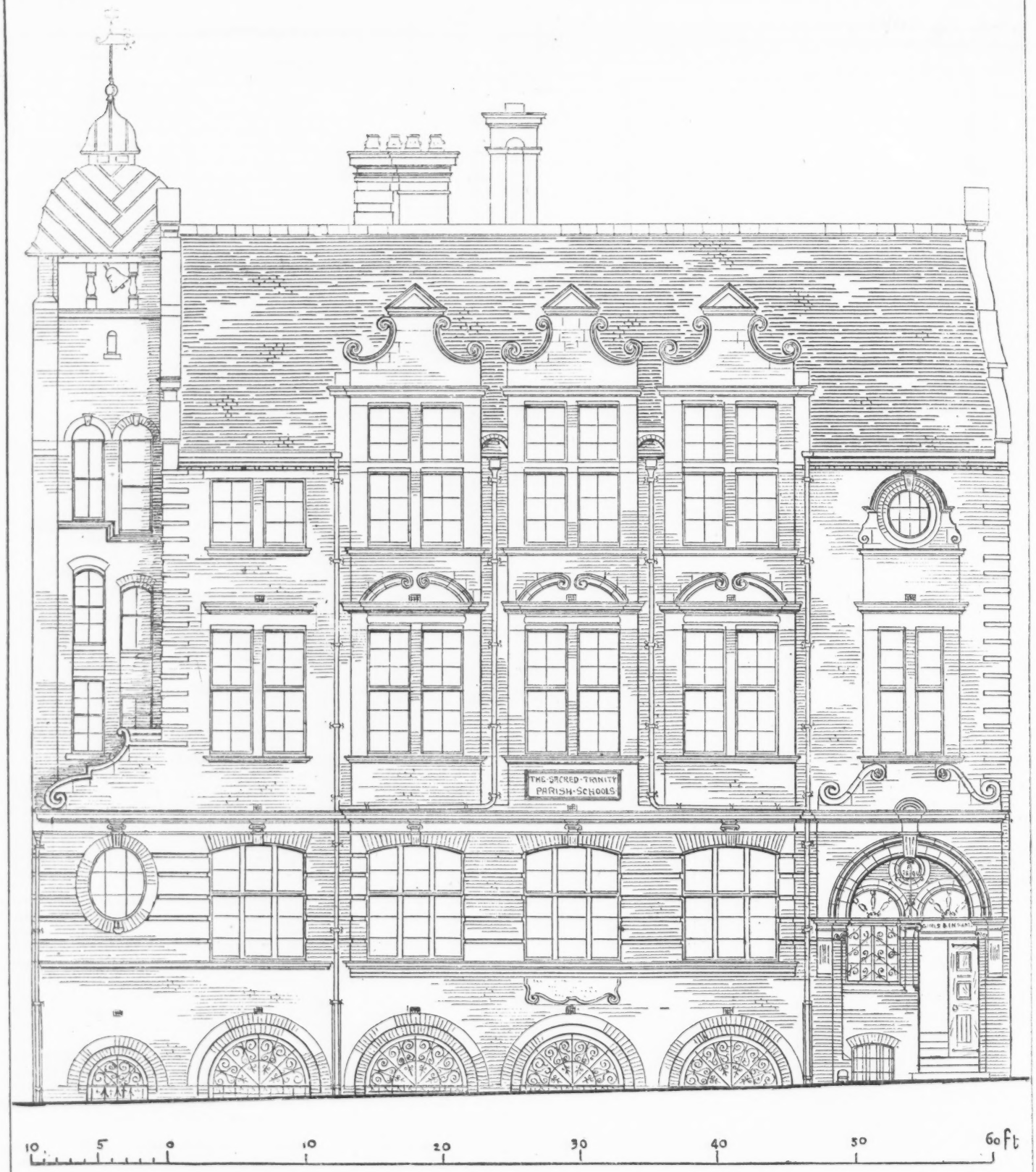
Regarding the appliances, urinals were alluded to briefly, the author considering them out of place in private houses, and advocating intermittent automatic flushing in all cases. The three forms of closet in general use, namely, the valve, wash-down, and wash-out, were described in detail, the former being considered best, the principal objection to the two latter, when made in one piece of earthenware, being the connexion with the soil-pipe, but this difficulty was being overcome by the introduction of lead traps, specially adapted to pedestal-closets.

In concluding, the author drew attention to the necessity for testing all drains by hydrostatic pressure, as being the only test in any way resembling the pressure to which drains were liable when a stoppage occurred.

ARCHITECTURAL SOCIETIES.

ARCHITECTURAL ASSOCIATION (LONDON).—The second meeting of the Discussion Section for the Session 1891-92 was held at the rooms of the Association on the 2nd inst., when Mr. A. W. Cooksey, A.R.I.B.A., read an interesting paper on "Acoustics." The meeting was well attended, and a good discussion followed the reading of the paper. Mr. H. L. Florence, F.R.I.B.A., was the special Visitor for the evening, and reviewed the subject in a very practical manner, mentioning the difficulties attending the application of the science to buildings and instancing numerous modern buildings where they had been more or less successfully solved.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—At the meeting of this Society held on Tuesday last, Mr. W. H. White read a paper entitled "The Architect and his Artists." The greater part of this we print on another page. The President of the Society, Mr. Innocent, presided, and there was a large attendance of members. Mr. White's paper was listened to with great interest, and after it a discussion took place, in which the President, the Vice-President, Mr. E.



Sacred Trinity School, Salford: Elevation.

M. Gibbs, Mr. C. Hadfield (Hon. Sec.), Mr. J. B. Mitchell-Withers, Mr. J. Smith, and others took part, and a hearty vote of thanks was given to the lecturer for his able and instructive paper.

Liverpool Architectural Society.—The second ordinary meeting of the current session of this Society was held on the 7th inst. at the Royal Institution, Colquitt-street. The first lecture of a series of four was given by the Rev. F. F. Grensted, entitled "Egypt as a Home of Early Art," the subject being illustrated by oxy-hydrogen lantern views.

Glasgow Architectural Association.—The usual monthly meeting of this Association was held on the 1st inst., when a paper on "The Antiquities of Renfrewshire" was read by Mr. Andrew Muirhead. The President, Mr. Wm. J. Anderson, occupied the chair. According to the author, the ancient stones of the county, possibly never very numerous, are now represented by one solitary specimen, the Barochan Cross. Of more strictly architectural remains, Paisley Abbey, in date and importance, holds the first place; and a detailed account was given of its ecclesiastical history and architectural merits, not omitting its monastic buildings. Kilmaloolm Church was the only other religious building instanced. Of castles, Crookston and Mearns are the oldest, of thirteenth century; of lesser importance are Barr, Stanley, Inverkip, and Levan, of fifteenth century. Newark, at Port-Glasgow, is of greatest interest, and was built at three periods, ranging between the end of the fifteenth and beginning of the seventeenth century. Haggs, Dargavel, and the stable-offices of Pollok House are more local samples, some suffering from over-restoration, others from neglect. Mr. Robert J. Gildard opened a discussion, and at its close the customary vote of thanks was awarded to Mr. Muirhead.

SACRED TRINITY SCHOOL, SALFORD.

We give an illustration of the elevation of this building, the memorial-stone of which was to be laid this day (Saturday) by Sir Henry Gore-Booth. Mr. J. Medland Taylor, of Manchester, is the architect.

Consecration of St. Andrew's Church, Morley.—On the 30th ult. the new church of St. Andrew's, Bruntcliffe, Morley, Yorks, was consecrated by the Bishop of Wakefield. The church is in the Early English style, and the plans were prepared by Mr. Michael Sheard, of Batley and Harrogate, the building being constructed of local stone. The church has been erected on land given by the late Earl of Dartmouth. The land given consists of one acre, and is divided into three portions,—a site for the church, site for Sunday schools, and site for a parsonage. Only the church has been erected, and this at a cost of about 2,500*l*. Accommodation is provided for 400 people.

ASTLEY HALL, LANCASHIRE.

ASTLEY HALL (originally "Dam House") stands in well-wooded grounds, about eleven miles west of Manchester.

It bears the date 1650, when it was erected by the Mort family; the frontispiece to the entrance appears to be later. The original studded oak door remains undisturbed.

The walls externally are of rough-cast, with stone dressings only to the quaint transomed and mullioned windows, the lowest windows in the bays being modern.

The Hall passed from the Mort to the Wetheral family (hailing from Cumberland, I believe), but is now in the hands of a syndicate.

At the last change of ownership the oak furniture and collection of weapons were dispersed. E. H.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday afternoon, at the offices in Spring-gardens, the Chairman, Sir John Lubbock, presiding.

The Administration of the Public Health (London) Act, 1891.—The Council resumed the discussion of the important report* of the General Purposes Committee on this subject.

On recommendation *e*,—

"That a Public Control Department be formed, under the direction of Mr. Spencer as chief officer, to consist of four clerks, forty-four inspectors, and forty-two assistants, all now in the employment of the Council; *that, in consideration of the increased responsibility devolving upon Mr. Spencer, his salary be, on 1st April next, increased to 650l. a year and do afterwards rise by yearly increments of 50l. to 800l. a year;* that he do cease to hold the office and title of Deputy Clerk; that such office be not filled up; and that the resolution of the Council to appoint a Chief Inspector of Weights and Measures at a salary of 500*l.* a year be not acted upon."

An amendment was moved to omit the words which we have italicised. This was agreed to, on a show of hands, by 46 votes to 15.

Subsequently, a further amendment was moved by Dr. Gibson Bott, to the effect that Mr. Spencer's salary be increased to 700*l.* per annum by four annual instalments of 25*l.*, the first instalment to fall due on April 1. After a long and tedious discussion, this amendment was carried, on a show of hands, by 33 votes to 29. A division being demanded, 47 members voted for the amendment, and 39 against it. The recommendation as amended was agreed to, after a futile attempt to refer the whole matter back for re-consideration. It was subsequently agreed that it be referred to the General Purposes Committee to prepare the references for the two Committees, and to make the necessary arrangements, subject to confirmation by the Council.

Date of the Election of the Next Council.—The General Purposes Committee presented the following report on this subject:—

"The County Council Elections Act provides that the election shall be on such day between the 1st and the 8th day of March as the Council may fix, and, if no day is so fixed, it is to be the 8th of March. If the Council fixes the day, however, it must do so not less than six weeks before the 8th of March. As the Council will shortly adjourn for the Christmas vacation, and as its re-assembling in January will be within a very short time of the six weeks above-mentioned, we think it well that the matter should now be settled by the Council. The 1st of March falls on a Tuesday, and therefore, presumably, it would be the last ordinary meeting of the present Council, though there might be an adjournment of the meeting if necessary to some later day. On the following Tuesday, the 8th of March, the newly-elected Council will come into office. On the 9th of June last the Council, when considering this subject previously to the passing of the Act, resolved by forty-six votes against forty that the first Saturday in March would be a convenient day for the elections. Having regard to this resolution, we recommend—

'That Saturday, the 5th day of March next, be fixed for the election of the new Council.'

The Council may also fix the day and hour for the statutory meeting at which the Chairman and Aldermen are to be elected. If no day is fixed by the Council the statutory meeting is to be on the 16th day of March, but the day fixed must be within ten days after the 8th day of March. The fixing of the day of meeting, however, need not be made within a particular time, and the Council, we think, will be in a better position to determine this at a somewhat later period. We propose, therefore, to defer until January the consideration of the day of meeting."

An amendment was moved by Mr. Westacott, and seconded by Mr. Fardell, "That Wednesday, the 2nd of March next, be fixed for the election of the new Council." On a show of hands, the amendment was lost by 48 votes to 29. A division was called for, and there voted for the amendment 33, against it 55, a majority of 22 for the Committee's recommendation, which was then agreed to.

Incidence of Local Taxation.—The further consideration of the Local Government and Taxation Committee's report on this subject was adjourned until the first meeting after the Christmas holidays.

Valuation of Land.—The report of the Special Committee on the Valuation of Land was also adjourned to the same date, the Council having some months ago decided to take this report in connexion with the one on the incidence of taxation.

The Sale of Ground Rents.—The consideration of the following recommendation of the

* Printed *in extenso* in last week's *Builder*, pp. 426, 427, *ante*.

Corporate Property, Charities, and Endowments Committee was also adjourned until the two reports just mentioned could receive consideration:—

"That land acquired for new improvements shall not be sold immediately, but that leases should be granted at ground rents to be fixed, such ground rents to be dealt with in the manner suggested in the above recommendation."

To this recommendation notice of the following amendment has been given by Mr. Saunders:—

"That the following addition be made to the motion—'That, in order to avoid the disadvantages which arise at the termination of building leases, the Council should obtain power to lease land with an option to the purchaser at the termination of the lease to renew at a valuation of the land only, exclusive of improvements made by the tenant.'"

Brooke's Market, Holborn.—The Housing of the Working Classes Committee brought up the following report:—

"In accordance with the resolution of the Council of October 13 last directing a scheme to be prepared under Part II. of the Housing of the Working Classes Act, 1890, for the improvement of the Brooke's-market (Holborn) area, your Committee have caused a scheme to be prepared which they now submit for the seal of the Council. It will be necessary to petition the Local Government Board for an order sanctioning the scheme, but this cannot be done until after the service of the notices of the scheme required by the Act. In order to save time it will be desirable to seal the petition as soon as the Solicitor has served the notices. Your Committee therefore recommend,—

'(*a*) That the seal of the Council be affixed to the scheme.

(*b*) That the seal of the Council be affixed to the petition as soon as the notices to the owners and others have been served.'"

These recommendations were agreed to, after some discussion.

Overhead Wires.—The Highways Committee reported that

"By section 5 of the London Overhead Wires Act, 1891, the Council is empowered to make and vary by-laws with respect to (*a*) the identification of overhead wires by registration or otherwise; (*b*) the regulation of wires; (*c*) the strength of the materials to be employed in placing, maintaining, and supporting wires; and (*d*) the removal of wires erected or placed otherwise than in accordance with such by-laws and of disused wires; and the Council may by such by-laws fix and determine the penalties to be imposed on the company or person failing to comply with any of the provisions of the Act, and continuing penalties in the event of any such offence being continued after conviction thereof. These by-laws are, however, to be of no effect until approved by the Board of Trade, which department is to prescribe to whom and in what manner notices of the intended by-laws shall be given; and it is further provided that, before such by-laws are proposed to the Board for confirmation, notice thereof with copies of the intended by-laws is to be given to the Postmaster-General. The general administration of the Act, and the enforcement of the by-laws when made by the Council and confirmed by the Board of Trade, devolve upon the local authorities, *i.e.*, within the City of London, the Commissioners of Sewers, and outside the City, the Vestries and District Boards, except as regards any street, road, embankment, bridge, park, garden, or open space vested in the Council where the Council is itself the local authority. We have prepared a series of by-laws (a copy of which has been sent to each member of the Council), and the Board of Trade has prescribed to whom and in what manner the notices of the intended by-laws shall be given. It is probable that some exception may be taken, by companies and others interested, to some of the provisions contained in these by-laws; and we are of opinion that we should have instructions to consider any suggested alterations and to represent the Council before the Board of Trade. We recommend:—

'That the draft by-laws under the London Overhead Wires Act, 1891, be approved; and that it be referred to the Highways Committee to issue notices and to take all other necessary measures to obtain the confirmation of the by-laws, including, should the Committee consider it advisable, the employment of counsel to support the by-laws before the Board of Trade.'"

The recommendation was agreed to.

Tenders for Painting and Repairs at Abbey Mills Pumping-station.—Some discussion arose on the following report and recommendation presented by the Main Drainage Committee:—

"We have had before us the tenders referred by the Council on the 17th November for painting, repairing, and cleansing works at the Abbey Mills pumping-station. The tenders are nine in number, and the amounts range from 395*l.*, the lowest, to 1,597*l.*, the highest. After careful consideration and conference with the officers, we are unable to advise the Council to accept either of the three lowest tenders, which amount respectively to 395*l.*, 399*l.*, and 450*l.*, and we have to recommend,—

'That, subject to an estimate to be submitted to the Council by the Finance Committee, as required by the statute, the tender of Mr. M. Marsland, amounting to 732*l.*, be accepted, and that the Solicitor be instructed to prepare the contract.'"

Why, it was asked by Mr. Beresford-Hope and other members, was it not proposed to accept the lowest tender? Because, replied Mr. Howell Williams, the Chairman of the Committee, the Architect had advised them that the work could not be done for less than from 700*l.* to 800*l.*, and from inquiries made by individual members of the Committee the same conclusion had been arrived at. Colonel Rotton and other members protested against such a course being taken in the absence of anything being known to the detriment of those who had sent in lower tenders than Mr. Money Marsland, but the recommendation was agreed to.

Timber-stacks used as Dwellings.—The report of the Housing of the Working Classes Committee contained the following:—

"A practice prevails in many parts of London of stacking timber in such a manner as to provide living accommodation, an opening being provided by way of window, and frequently the stacks are so high as to obstruct the light and ventilation of adjoining buildings. The Vestry of Shoreditch has drawn the attention of your Committee to such an erection in Alfred-place, Haggerston, desiring to be informed whether it is capable of being treated as an obstructive building within the meaning of the Housing of the Working Classes Act, or as a 'building' within the purview of the Building Act.

The Solicitor advises that such a structure cannot be brought as a 'building' within the provisions either of the Housing Act or of the Building Acts.

In 1882 the late Board of Works, consequent upon the collapse of a timber stack at Vauxhall, introduced a clause into the Metropolis Management, &c., Bill of that year dealing with the subject, but owing to opposition allowed it to drop.

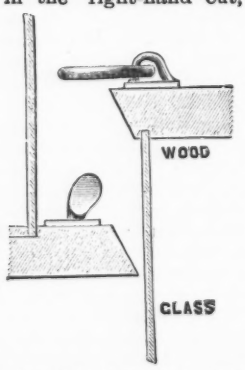
The matter is one which should certainly be considered with reference to the pending amendment of the Building Acts, and your Committee recommend,—

'That the question be referred to the Building Act Committee for consideration in connexion with the amendment of the Building Acts.'"

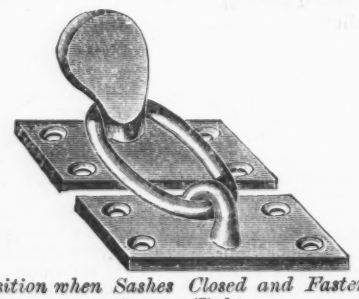
The recommendation was agreed to, and after transacting other business, the Council adjourned.

PICCAVER'S PATENT SASH-FASTENER.

AMONG the numerous patents for sash-fasteners which have come before us, this one, patented by Mr. J. A. Piccaver, of Northampton, takes a good place, owing to its simplicity of parts and the impossibility of its getting out of order. It consists of a loose, oval-shaped ring on the rail of the lower sash, which on closing the window drops over the button shown on the rail of the upper sash. The button is then turned round at right-angles with its former position, as shown in the right-hand cut, in which



Section Showing Position Previous to Fastening.



Position when Sashes Closed and Fastener Drawn Tight.

PICCAVER'S PATENT SASH-FASTENER.

position the ring cannot be lifted over it, and the shank of the button is so shaped that pulls the ring tight and draws the sashes together. The only defect is that the ring has sufficient play to right and left to occasionally require adjusting with the hand to prevent it missing the button when closing the sash. This might be entirely obviated by a slight alteration in the mode of attachment of the ring.

Correspondence.

To the Editor of THE BUILDER.

"DECORATIVE ART OF JAPAN."

SIR,—I have read with very great interest the series of articles on the "Decorative Art of Japan," by "F. T. P.," which have appeared recently in the *Builder*.* In the concluding article, published in the issue for November 7, "F. T. P." endeavours to trace the origin of the

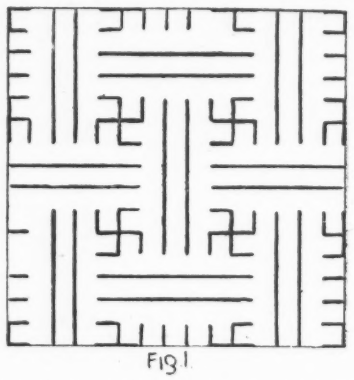


Fig 1

well-known Chinese diaper, or key pattern (which he illustrates on p. 341, fig. 41), to the "swastica" on the one hand and the "pa-kwâ" on the other. With regard to the former, he seems to have made out a good case, but his reasoning about the latter is hardly so satisfactory. The essence of the eight trigrams known as the "pa-kwâ" is that it consists of whole and

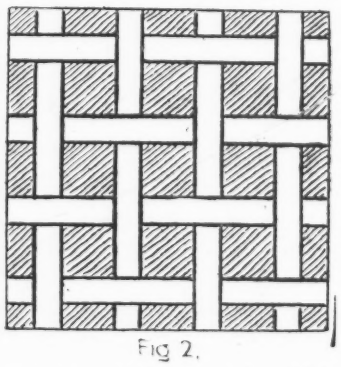


Fig 2.

broken lines placed in contrast, by which many things are symbolised, such as strength and weakness, light and darkness, the male and female principle in nature, and so on. The small projections at each end of the lines (see p. 341, fig. 37), which occur in some forms of the "pa-kwâ," and which are necessary to the working out of "F. T. P.'s" suggested

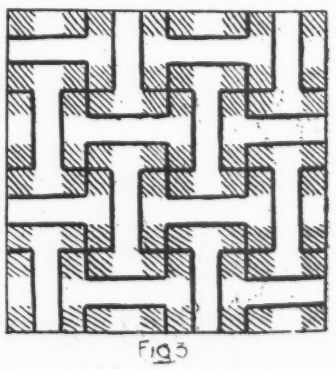


Fig 3

method of the development of the diaper pattern, appear to be only an accidental feature introduced by way of making it more ornamental, and rather detract from its use as a symbol than otherwise. Those of your readers who wish to investigate the subject of the "pa-kwâ" more fully will find a long account of its meaning in the "Sacred Books of the East," edited by Professor Max Müller, and published

*See *Builder* for Oct. 17, 24, 31, and Nov. 7.

by the Clarendon Press (vol. xvi., the "Yi King, or Classic of Changes," translated by James Legge). The "pa-kwâ" seems to me to be far too much of a diagram to be capable of successful transformation into ornament, as it resembles nothing more nearly than the dots and dashes of the Morse code of telegraphy.

The swastica, on the contrary, is eminently suitable for decorative purposes, especially for

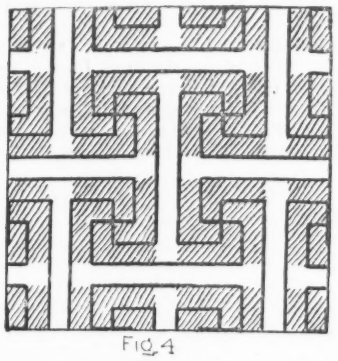


FIG 4

placing on the central points to which other lines converge. Its peculiar form, like the three legs of the Isle of Man, is suggestive of rotary motion, and leads the eye outwards from the centre, having the same effect as spirals in curvilinear designs. I propose to offer an alternative suggestion to "F. T. P.'s" as to the

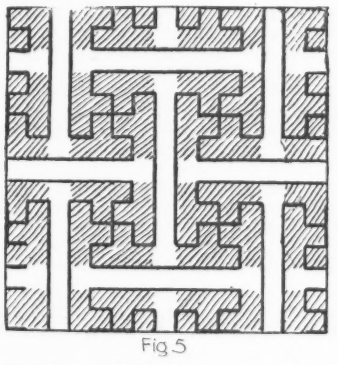
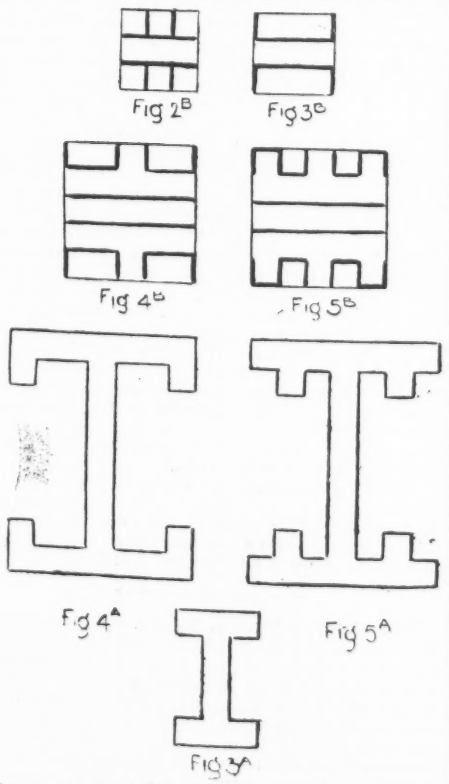


Fig 5

development of the Chinese diaper pattern under discussion. Every geometrical pattern can be looked at in two different ways. (1) The attention may be directed to the shape of the plane figures between the lines, or (2) the lines may be regarded as forming the pattern. "F. T. P." has thought principally of the



figures, and tried to work out their evolution, but the diaper may be much more easily understood by studying the lines. I believe the diaper to have resulted from the combination of the swastica with a pattern composed of bands crossing over and under each other at right-angles, as in plain weaving. This combination is shown on fig. 1. The woven bands pattern is formed by drawing rows of squares set apart from each other, and producing the sides in rotation (see fig. 2). If a simple cross be placed in the centre of each of the squares (which are shaded in the diagram), and half of each of the sides of the squares be removed (see fig. 3), we get a pattern where the figures between the lines are shaped like fig. 3A. If, instead of crosses, we place swasticas, alternately right and left-handed, in the centres of the squares, and remove a quarter of each of the sides of the squares (see fig. 4), we get a pattern where the figures between the lines are like fig. 4A. This is the diaper illustrated in "F. T. P.'s" article (p. 341, fig. 40). The diaper we are in search of is merely a variation of the last, in which the swasticas have an extra bend at the end of each arm in a reverse direction (see fig. 5). The shape of the figures between the lines is shown on fig. 5A. It may be useful to decorative artists to point out that all the patterns described may be formed with square tiles, or with stencil-plates, marked in the manner shown on figs. 2B, 3B, 4B, and 5B, corresponding to the patterns on figs. 2, 3, 4, and 5 respectively. The tiles, or stencil-plates, must be placed facing in directions at right-angles to each other alternately.

A pattern composed of quadruple spirals with C-shaped connexions is the curvilinear representative of the series we have been investigating.

J. ROMILLY ALLEN.

ARCHITECTURE AND SCULPTURE.

SIR,—At the last meeting of the Royal Institute of British Architects, whereat was discussed the "Relation of Sculpture to Architecture," as reported in your journal, I would submit that no clear understanding was arrived at as to what architectural sculpture really is. It is surely something more than sculpture treated in a large and simple manner, in order that it may harmonise with the masses of architecture. Sculpture, though it be so treated, is but an embellishment of architecture; and, although thus employed by the Gothic builders, it was this fact, Sir, as I imagine, which led you to assert the independence of the elder art, towards the complete expression of herself by her own methods. But I would urge that, in dealing with true architectural sculpture, the methods of both the arts are identical. Sculpture so used is as much a part of the *ensemble* as is the chorus a part of the drama to which it is introduced. The chorus was no embellishment. It was in addition to its rhythmical movement and decorative effect, in some respects explanatory of the theme; and in the same way may sculpture give emphasis and expression to an architectural *motif* by reason of its more graphic powers of representation. The Parthenon frieze, destitute of sculpture, would run wild and unordered around the building, pulled either way by the bias of direction given to it by its length. It is the surely moving procession, its action heightened by its light and shade of swift movement and pause, that compels the direction of the frieze towards the focus of the temple,—the eastern front. Nothing but such a train of sculptured or painted figures could have effected this capture of errant line, and for this end sculpture became a part of the architecture, and accomplished its purpose by the purely architectural law of bias. Again, in the pediment, the cima lines rake upward, and the forces they bear along with them, gathered from the play of the far-stretching corona, meet and drop. The moment to the beholder is one of expectant interest in the central group. This interest slips and slips from limb and fold, until it is again caught by the flow of marble line, and swept aloft. All Greek architecture thus conserves its force, while we notice the Gothic builders discharge it obliquely by buttress, and allow it to escape in fitful energy from crocket and spire.

Where architecture and sculpture so combine, the one is no mere frame to the embellishment of the other, while the latent forces of architecture play over the surface of both alike. The sculpture is introduced like a brilliant cadenza in a concerto. It is original, but it is the same theme.

C. J. TAIT.

Exeter.

*** We are quite in agreement with our correspondent's ably-written letter, as far as the architectural function of the Parthenon sculpture is concerned. The point suggested by Mr. Statham at the meeting referred to was that, however fine was the effect of the Parthenon frieze in a decorative sense, *as sculpture* it was practically out of sight, where its beautiful details were lost. If it were fixed anywhere in the British Museum at the height from the ground at which it was fixed in the building, there would be a general outcry that it had been placed where no one could properly study it. The colouring which it originally had would bring out the general composition, no doubt, but still much would have been lost; and it was lighted from below, the worst light for sculpture.

AMERICAN "FRAME" HOUSES.

SIR,—To read or say anything in public is to be assured beforehand that your remarks will be misunderstood, mispresented, or even entirely falsified, and if the President of the Institute suffers thus, it is vain, I suppose, for me to expect to escape.

Some of the reports of my paper and the following discussion simply bristle with errors which I have neither time nor inclination to correct; but when one of your correspondents states that I "recommended" a certain book, I must ask you to allow me to flatly contradict him.

I have no wish, either by paper or letter, to act as the advertising agent of any book,—good or bad.

C. H. BRODIE.

*** In our opinion, Mr. Brodie's paper, taken as a whole, certainly amounted to a recommendation of the book.—ED.

THE DISPUTE IN THE BUILDING TRADE.

SIR,—Signs are not wanting that the arrangement as made by the arbitrator between the master builders and the carpenters and joiners in the late dispute is not satisfactory to the latter, nor yet to other hands in the building trade, and that these latter intend to take up the question of an advance in wages, which probably may lead to another struggle more bitter and much larger than the one just terminated. Allow me, Sir, through the medium of your valuable paper, to put a few hints before the masters on this important subject.

We know the trades societies began and promoted the late dispute in a spirit of tyrannny and selfishness, and at the present time they are exhibiting this "dog-in-the-manger" feeling on many shops and jobs to such an extent that a non-unionist is treated and looked upon as a much inferior being, and, of course, working under those conditions, his lot is by no means an easy one.

There are plenty of non-unionists, and unionists too, who are disgusted with this mean spirit shown towards a fellow-man; and in some cases the masters are at fault, as invariably the non-unionists are discharged, and very often the foreman will only start society men.

Now, Sir, why do not the Masters' Association have and promote a free labour bureau? If the trades' union society make such hard-and-fast lines between society men and "blacks," why not the masters between free and "tied men?"

How often is it a workman finds himself in want of a job, it may be the first time, and, though he may be known, yet he meets with the answer, "No chance;" and, in order not to see his family come to want, is thus compelled to join the society? I do not advocate an out-of-work benefit, but I am sure if this Central Free Labour Office was open, employers who want hands would send their requirements to that office, and masters who may be discharging hands would give them a "free" ticket to apply to that office. Many men would gladly avail themselves of such an opportunity, and thus obtain employment, and not be compelled to join the trade society.

A GENERAL FOREMAN.

GRAY'S-INN HALL.

SIR,—As I have strongly advocated the removal of the stucco from this building, I wish to as strongly deprecate the method of repair so far adopted.

Now that the cement is nearly all removed, it is more easy to see what should be done. To anyone not possessed by the Demon of Tidyness, it seems obvious that nothing should be done to the general surface except by patient hand labour to remove all traces of the stucco, and where absolutely necessary, to repoint the brickwork. This should, however, be done with white mortar, and to match the old work.

True, the stone dressings have been scored over, but in a not unsightly manner, that gives something of the effect of rustication. Thus treated, the hall will look like a charming old building that has been somewhat roughly treated, but retains still most of its beauty of form and all of its beauty of colour.

As I am told that ample evidence of the original building exists, there is no excuse for the clumsy new sets-off to the buttresses. Bath stone is never a fit material for repairs in this part of England; Bere stone is usually suitable, but no doubt the records of the Inn would show where the old stone came from. Stone used in repairs should never be dressed to such a painfully fine surface, but should be left with a rougher finish.

As a tenant of the Inn for many years, I venture to plead that nothing should be done rashly, but that the most ample consideration should be given to the treatment of what should be a most interesting addition to what is already one of the most charming spots in London.

Ralph Nevill, F.S.A.

The Student's Column.

MARBLES.—XXIV.

ITALIAN MARBLES.

SEVERAL of the Italian marbles raised by the Romans were described in dealing with the historical portion of our subject; the object of the present article is to describe the important quarries known generically as Carrara, and to briefly allude to the marbles at present raised in the Italian Peninsula.

The Carrara marble district is situated between Spezzia and Leghorn, and the principal towns engaged in the industry are Carrara, Massa, Seravezza, Pietrasanta, Camajore, and Viareggio, which, including the surrounding villages, have a population of upwards of 160,000. The quarries are situated from five to seven miles from the Mediterranean seaboard, where there are large store-yards, wharves, piers, cranes, and accommodation for coasting vessels. The Massa and Carrara quarries are connected with the piers and store-yards by means of railways and roads having considerable inclination; whilst the other workings communicate only by roads, though mètre-gauge railways have been authorised. All the quarries are surface workings, at an altitude of from 700 to 2,000 ft., and in some cases,—*e.g.* the Monte Altissimo quarries in the Seravezza division, which yield some of the finest statuary marble of the whole district,—3,000 ft. above sea-level. They are situated, for the most part, in the deep gulleys of the mountain range, and the large blocks are let down from the quarries on inclined planes by means of runners, cross-beams, and ropes twisted round equi-distant fixed poles to the loading-stages of the railway or of the bullock-carts. The rough treatment to which the stones are subjected during this process frequently creates vents and shakes, which come out as the material is being worked up. Dr. C. P. Sheibner, Assoc.M.Inst.C.E., in alluding to this matter, states* that various experiments have been made from time to time with a view of substituting mechanical contrivances for this slow and often dangerous process of sliding the blocks down; but the multiplicity of these inclines scattered over a large number of quarries, no less than the high motive and brake-power required for such heavy loads on gradients varying from 10 to 50 per cent., and the consequently excessive outlay that would be required for the introduction of these methods, have hitherto greatly militated against their adoption. Dr. Sheibner has recently designed an effectual and comparatively inexpensive appliance for this purpose, which consists of a four-wheeled trolley, or rack-engine, to be worked by six men, which will, by a series of pinions, transmit sufficient power to push, besides its own weight and that of the men, two empty trucks up an incline of 15 per cent. The inclines are laid on the ordinary gauge, with a raised single central rack of the ladder type, in lengths of 100 mètres, alternating with short level stages, in order to rest the men. A pinion-wheel, with a powerful screw-brake acting upon it, serves to retard or arrest the loaded truck on descending the incline, and the trolley is provided both with a pinion and a slipper brake. The design is an adaptation of a similar but lighter machine, which has been at work for years in a stone quarry near Berne, in Switzerland.

The same author states that the number of mills for sawing the marble is 75 in the Carrara, 30 in the Massa, and 45 in the Seravezza division, and there are altogether 685 saw-frames. These mills are mostly driven by water-power, but gas-engines and steam are also brought into requisition, and they work night and day throughout the year. The total output of sawn slabs amounts to more than 100,000 tons per annum. There are also about 130 polishing works for ornamental and building purposes generally. The sand used in sawing the marble is obtained exclusively from extensive deposits near Viareggio, and it was formed by the disintegration of the hard sandstone which bounds the northern banks of the Lake of Massaciuccoli. The sand-beds cover a superficial area of about 1,600 acres, and are about 42 ft. in depth; about 70,000 tons per annum are being excavated.

The annual output of the quarries, it is stated, averages 150,000 tons at Carrara, 35,000 tons at Seravezza, and 20,000 tons at Massa. The mean annual export of marble to all parts of the world, in blocks, slabs, and polished, based on the results obtained during the last ten years, as published by the Carrara Chamber of Commerce, amounts to 133,000 tons from Carrara and Massa, and 30,000 tons from Seravezza,—total, 163,000 tons. The exports, however, considerably fluctuate. In 1887, for instance, they amounted to as much as 226,000 tons. The value of the average annual exports is about 670,000*l.*

The marble of the Carrara district is truly metamorphic in origin,—*i.e.*, it was once an ordinary limestone, and has been altered to its present highly crystalline condition through the action of great heat, pressure exerted at depths from the surface, and other accredited agents of metamorphism. In fact, the student may regard Carrara statuary as the typical rock of the class to which it belongs,—it is a marble within the true acceptation of the term. The geological age of the beds has formed the subject of several classical papers, in which English geologists play a conspicuous part. The earlier school classed them amongst the Palæozoic series, but there seems to be no doubt that their age is either the Triassic or Jurassic. Professor Pilla showed* that they are referable to the Liassic and Oolitic Periods, and that the grey limestones found in the valley of the Tecchia containing Jurassic fossils graduates insensibly by changes of colour and crystallisation into the pure marbles of Carrara and Massa. This view was suggested years previously by Sir H. de la Beche, and Sir Roderick Murchison fully confirmed it.

Professor Hull, who made a rapid survey of the district in 1871, remarks† that between the two great beds of crystalline limestone worked in the valley of the Torano are calcareous schists, passing into a mica-schist; and the impression he received was that the two great beds of marble are disconnected portions of the same mass on opposite sides of a sharp anticlinal fold shown in these schists. The mica-schist was originally shale, the calcareous schist earthy limestone, whilst the crystalline marble was, he says, an ordinary Jurassic limestone. Dr. Sheibner, in the paper already quoted, states that organic remains discovered in the series of stratified and sharply twisted anticlinal folds characteristic of the mountain range, have led to the conclusion that the marble is of Triassic age, and he places the thickness of the marble beds at 3,500 ft. From this it is clear that the supply of the stone is practically inexhaustible.

An analysis of the marble shows it to be almost pure carbonate of lime,—carbonate of lime 99·24, carbonate of magnesia 0·28, and oxide of iron 0·29. Small crystals of quartz and iron pyrites occasionally occur, forming very objectionable features.

The white marbles of Carrara are known in England as Sicilian, vein and statuary, the first-mentioned being the most common, and the last the most highly prized. Blocks of statuary are rarely obtained in a perfectly pure condition; the principal quarries in it are at Ravaccione and near Seravezza. Marble of a blue tint, known as "dove," comes from Canal Grande and Collonata; "bardiglio" has a pale dove ground, with dark veins; and Seravezza Breccia is peach-coloured, being much esteemed in this country. Green and white marble is found near Pietrasanta, and a fine stone, known as Pavonazzo, has a cream or light brown ground, with purple and greenish veins.

Leaving the Carrara district, we find yellow marbles in a few localities in Tuscany, near Sienna and Mount Pelli; and grey Tiburtine is obtained from the neighbourhood of Cesi, near Terni. Portor marble, black with gold, is exceedingly handsome; it is raised near Porto Venere, Gulf of Spezia. Several coloured stones, including purple, red, and green tints, are procured at various places near the coast between Spezia and Genoa. Black marbles are found in Piedmont, Tuscany, Brescia, Bergamo, and at Como; and red and brecciated stones are common in Tuscany, near Florence, and in Sicily.

The well-known Verona marble, which is white, cream-coloured, and reddish, is got from beds of Tertiary age, which crop out along the banks of the Adige. It is essentially a "fossil" marble, the remains of *Nummulites* being found therein; occasionally it assumes a brecciated appearance. Verona marble has been extensively used in many large buildings in Venice, including the Palace of the Doges, the portal of St. Mark's, and the Accademia delle Belle Arti.

Milan Cathedral is built of white marble from Monte Candido, north of Lago Maggiore.

Italy is rich in serpentines, to which the name *vert antique* generally applies. The "Verde di Prato" is quarried in the Apennines, near Florence, and is largely used in Tuscany; "Verde di Genova" comes from Pietra Lavezzara, near Genoa; and "Verde di Pegli" is from the same neighbourhood.

* "The Carrara Marble District Railway." Min. Proc.Inst.C.E., vol. ciii. (1891), p. 344.

* "Bull. Soc. Géol. de France," t. iv., p. 1,068.

† "Building and Ornam. Stones," 1872, p. 128.

SURVEYORSHIPS.

Brighton.—At a meeting of the Brighton Town Council, on the 3rd inst., it was unanimously resolved that the salary of Mr. Francis J. C. May, the Borough Surveyor, be increased from 500*l.* to 700*l.* per annum. Mr. May has now held the office two years, and the manner in which he has fulfilled his duties was referred to in highly complimentary terms by the Mayor and several other members of the Corporation.

Dorchester.—Mr. Gilbert J. Hunt, of the Borough Surveyor's Department, Bournemouth, was on Tuesday last selected by the Dorchester Town Council, out of 115 applicants, for the post of Borough Surveyor of that town, at a salary of 200*l.* per annum, in succession to Mr. F. T. Maltby, appointed to Guildford.

St. Pancras.—The St. Pancras Vestry, in view of filling up the office of Chief Surveyor to the Vestry, vacant by the recent death of Mr. William Booth Scott, have tabulated the duties of the office, and have collected, printed, and circulated a great deal of information as to the duties and remuneration of the Surveyors to other metropolitan Vestries and District Boards of Works.

OBITUARY.

Mr. R. B. Grantham, M.Inst.C.E.—We regret to hear of the death, on the 5th inst., of Mr. Richard Boxall Grantham, F.G.S., the well-known civil engineer. He was a son of the late Mr. John Grantham, C.E., and was in his 86th year. He had been a Member of the Institute of Civil Engineers ever since 1844.

M. Alphand.—The *Times* Paris correspondent, telegraphing on Sunday night last, said:—"M. Alphand, whose death was prematurely announced last week, expired this morning. Born at Grenoble in 1817, he was appointed in 1839 Surveyor of Roads and Bridges at Bordeaux. M. Haussmann, then Prefect of the Gironde, appreciated the ability and activity shown by him in embanking the Gironde, and when himself summoned to Paris he took Alphand with him. Haussmann did much to clear away slums and open new boulevards, and Alphand was his indispensable auxiliary. The latter had an especial gift for designing public gardens and promenades. He took an active part in the Exhibition of 1878, and the leading part in that of 1889. In acknowledgment of the unpredecented success of the latter he was made a Grand Cross of the Legion of Honour, a rank not before reached by a civil engineer. He also succeeded Haussmann last year in the Academy of Fine Arts. Though he had had two paralytic attacks, he retained his post till the last, and till a fortnight ago discharged its duties."

Mr. Alexander Stuart, architect, of the firm of Messrs. Packham, Coote, & Stuart, Exeter, died of typhoid fever, after a very short illness, on the 23rd ult., aged 35. Articled in Glasgow, Mr. Stuart came from Edinburgh and joined the firm soon after the death of the senior partner, Mr. G. Packham, some five years ago.

Mr. H. J. Steel.—The death is announced of Mr. Harry John Steel, junior partner in the firm of Steel & Garland, of Sheffield, who died on the 5th inst., aged forty-two years, and was on Monday last interred at the Sheffield General Cemetery.

The Bristol Timber Trade.—Messrs. King Bros.' monthly timber circular, dated December 1, says that "the arrivals for the past month consist of one steamer from Montreal, a portion of her cargo consisting of deals, &c., equalling about 120 tons register; one from New Brunswick, 769 tons; one from Riga, 591 tons; seven from Sweden and Norway, 2,893 tons; two from Finland, 1,344 tons; altogether twelve vessels, 5,717 tons register, against eleven vessels, 5,951 tons register, for the corresponding month last year, showing a decrease of 234 tons register. For the season commencing February 1, 1891, to the present time there have arrived 110 vessels, 69,964 tons register, against ninety-five vessels, 58,040 tons register, for the same period last year, showing an increase of 11,924 tons register."

GENERAL BUILDING NEWS.

PROPOSED MUNICIPAL BUILDINGS FOR BRISTOL.—The Finance Committee of the Bristol Town Council met on the 4th inst., and the Mayor (Dr. Highett) presided. Towards the end of the sitting the municipal buildings question came up for consideration on a report from the Town Clerk. Some months ago the Finance Committee presented a report to the Town Council in favour of advertising for plans and designs for new buildings on the sites already acquired by the Corporation,—that is, including the present Council-house and old police-court sites and the site of Doddrell's property immediately contiguous; the cost of the buildings not to exceed 80,000*l.* The Town Council sent back this report, and instructed the committee to ascertain and report the cost of acquiring the entire space between Broad-street and Small-street and Albion-chambers and Corn-street, including the Bristol and West of England Bank. Alderman Sir Charles Wathen conducted inquiries as to the cost of this enlarged area, and though the committee have not, we (the *Bristol Times and Mirror*) believe, formally reported on the question, it has been generally understood that the cost was far greater than the committee could recommend the Council to incur.

SCHOOL BUILDINGS, GLASGOW.—The Whitehill Public School, which has been erected by the School Board of Glasgow, was formally opened on the 16th ult. The school, which is situated at the north-west corner of Whitehill-street and Finlay Drive, Dennistoun, is rectangular on plan, having a central hall with galleries, into which every class-room opens. There are three floors of class-rooms. One half of the ground-floor is occupied by the infants' department, having three rooms; the general schoolroom, with two galleries and floor space for drill; and two class-rooms, giving in all accommodation for 300 infants. The other half of the ground-floor is for the initiatory department, with three rooms for eighty scholars each. The first-floor provides eight class-rooms, each room accommodating sixty scholars. The second-floor provides three drawing class-rooms. There is one cooking class-room, a chemical lecture-room, and a chemical laboratory and balance-room. On the ground-floor there is a head-master's room and a mistress's room. Lavatories for hand-washing are fitted up on each flat of the building. The central hall is lighted from the roof with a large cupola carried on framed couples, with patent roof-lights. The vestibules, stairs, galleries, and hall are lined with enamelled tiles of different colours. Three separate play-grounds with play-sheds and latrines are provided for the boys, girls, and infants. The play-shed for the girls is in the basement story of the school. The janitor's house, of three rooms and kitchen and bath-room, is placed next the girls' play-shed, and behind it is the heating chamber. The school is built with red freestone from Corncockle Quarries. On the north front is the boys' porch, and on the south front the girls' porch. The site is enclosed with a parapet wall. The vitiated air is drawn off through channel openings near the ceilings by means of Munn's exhaust ventilators, with sufficient inlet for fresh air. The building is heated by hot water. The site cost 2,205*l.*, and the building is estimated to cost about 15,050*l.* The work has been executed under the superintendence of and from plans prepared by Mr. W. F. Salmon, F.R.I.B.A., of Glasgow. Mr. J. Walker Armstrong was the measurer, and Mr. Robert Peffers acted as clerk of works.

SCHOOL BUILDINGS, GATESHEAD. — The new Higher Grade Schools which have been built by the Gateshead School Board at Whitehall-road, High West-street, were recently opened by the Right Hon. A. J. Mundella, M.P. The new schools were designed by Mr. W. H. Dunn, and are divided into two blocks,—a main block for the older scholars, and a detached block for the younger children. The main building is in two floors, the lower rooms being devoted to the boys, and the upper rooms to the girls. The school is constructed on the class-room principle. A central corridor gives access to the various rooms. On each floor there are six class-rooms, each room affording accommodation for 60 children. There is a total accommodation in the building for 720 pupils. Cloak-room and lavatory arrangements are provided, as well as retiring-rooms on each floor for the teachers. Downstairs there is a cooking-room, and a small dining-room for boys has been added. A chemical laboratory is in course of construction. The junior school is built a little to the west of the main block. The new schools are built of Sherburn bricks, with stone dressings. The cost of the new schools, including land and furnishing, is about 11,000*l.* The general contractor was Mr. T. H. Hutchinson, of Gateshead.

CHURCH OF ST. ANDREW'S, WEST KIRBY.—The nave of St. Andrew's new church, West Kirby, was dedicated by the Bishop of Chester on the 28th ult. The part of the church at present erected consists of a nave 24 ft. wide, with north and south aisles, and a temporary chancel formed at the east end of the nave, with the requisite arrangements for the clergy and choir, and communicating with the vestry. An organ has been erected at the end of the south aisle. The entrances to the nave are by north and south porches. The nave and aisles are provided with chairs, with accommodation at present for 400 worshippers. The building is in the Early Perpendicular style, and is built of local red sandstone, the interior of the walls being faced in ashlar of the same material. The roofs are open-timbered in pitch-pine, with hammer-beam principals, supported by moulded shafts rising from the capitals of the arcade columns. A clearstory surmounts the arcade. The east end is temporarily built up until the permanent chancel, tower, and vestries are erected. The east wall has been treated with simple decoration on the upper portion, and dossal hangings above the altar. The heating is by small bore pipes, and has been carried out by John King, Limited, of Liverpool. Mr. W. H. Forde, Birkenhead, was the general contractor for the work, which has been carried out under the superintendence of the architects, Messrs. Douglas & Fordham, of Chester.

PROPOSED RESTORATION OF SWANSEA PARISH CHURCH.—At the National Schools, Swansea, on the 30th ult., a meeting of the congregation of St. Mary's was held in connexion with the restoration scheme of the parish church. Canon Smith, vicar, presided. He said that Sir Arthur Blomfield was preparing plans and a design by which the Herbert Chapel, chancel, and the tower of the present building, might be preserved. Eventually a resolution approving of the scheme was adopted. Canon Smith stated that the scheme was estimated to cost 20,000*l.*

QUARTERS FOR MARRIED SOLDIERS, PLYMOUTH.—The construction of a new block of buildings for the accommodation of married soldiers will at once be commenced at Fishers Nose, Plymouth, under the direction of Col. Rathbone, C.R.E., Devonport. The War Department has accepted the tender of Messrs. Reed, Blight, & Co., Limited, contractors, of Plymouth, for the works.

NEW FLOUR-MILLS, EDINBURGH.—New roller flour-mills are about to be erected at Chancelot, Ferry-road, Edinburgh, by the Scottish Co-operative Wholesale Society, Limited. The plant will have a capacity of manufacturing from twenty-five to thirty sacks of flour per hour, or between 3,500 and 4,000 per week. The main buildings will face Dalmeny-road, being 372 ft., and will consist of (1) roller flour-mill, 103 ft. in length and six stories high: (2) a large engine-house and electric-lighting machinery-room, with three wheat-cleaning floors; (3) tower containing wheat-pit, millmasters' and sample-rooms, continuation portion of wheat-cleaning floors, and a large water tank; (4) range of silos; and (5) sack cleaning, repairing, and storage lofts. The buildings to the rear are to consist of a warehouse with a storage capacity of 48,000 sacks of flour, the mechanics' shops, a boiler-house, and a chimney-stalk, 215 ft. high. Fronting Dalmeny-road will be the counting-house and a house for resident employés. From the main building a tower will rise to a height of 150 ft. with a clock, having faces towards four sides. The tower is to contain the above-mentioned tank, which will have a capacity of 75,000 gallons of water for supplying an installation of sprinklers. Throughout the buildings there will be fitted up 2,500 sprinkler-heads connected with about four miles of piping. The sprinkler-heads will be so constructed that, on the temperature rising to 150 deg., water will be discharged. The valves in connexion with the sprinklers will be so arranged that, in the event of fire breaking out, gong alarms indicating the locality will be sounded. The building will be fitted up throughout with electric light. The roller flour-milling and other machinery will be erected by Mr. Henry Simon, of Manchester. Mr. James Simpson, Leith, is the architect for the buildings, and the work, so far as possible, is to be carried out by the society's employés.

FOREIGN AND COLONIAL.

FRANCE.—The new Roumanian Church in the Rue Jean-de-Beauvais is to be inaugurated in a few days.——Lord Lytton is the second English Ambassador who has died in Paris while in the exercise of his diplomatic function. The first was James Beaton, Ambassador from the Court of James I., who died in 1603, and in accordance with his wish was buried in the Chapel of St. Jean de Lateran, demolished in 1823. The name and arms of James Beaton are carved on the gateway of the Collège des Ecossais, in the Rue des Fossés Saint Jacques, of which he was one of the founders.——M. Paul Dubois, who had been commissioned to execute the monument to Georges Bizet, the composer, has declined the task, on account of ill-health, and it is to be made over to M. Falguière.——M. Dusart, pupil of MM. André and Laloux, has obtained the prize in the Chaudesaigues competition. The subject for the competitors was a public foyer in a theatre.——The Kunst Club, or Cercle des Arts of Rotterdam, has opened a very interesting exhibition of paintings at the Ville de Paris pavilion in the Champ de Mars, which will remain open till December 31. The exhibitors are all Dutch artists, but some of them are well known to the Parisian public; we may mention especially the names of MM. Israëls, Mesdag, Neuhuys, Artz, Mdme. Ronner, and Mdme. Schwartze.——The Direction des Beaux-Arts has purchased for the Luxembourg a fine portrait of a lady by Whistler.——An international photographic exhibition on a large scale is to be organised in the Galérie Rapp, from April to October next year.——The death is announced of the Abbé Straub, Canon of the Cathedral of Strasburg, member of the French Society of Archæology, and President of the Society for the Conservation of Historic Monuments of Alsace. He has left to the city of Strasburg his collection of works of art.——An exhibition of the works of French artists will shortly be held at St. Petersburg, in the Hôtel of the Imperial Society for the encouragement of art.——The commemorative monument of the battle of Champigny has had to be repaired considerably, as well as that of Bazeilles.——There is to be opened in a few weeks, in a central position in relation to the communes of Montreuil, Fontenay-sous-Bois, and Vincennes, a large asylum for the indigent of these three communes. The building was commenced in 1889, under the direction of M. Jacques Lequeux, architect. The building has cost 400,000 fr. A large garden extends all round it.——Part of the walls of the ancient abbey of Cormery has fallen. The abbey dated from 791, and was destroyed by the English in 1358, and rebuilt shortly afterwards.——The jury of the competition opened at Bayonne for the construction of a museum and library has declined to award the first premium. The second has been awarded to M. Plankaert, architect, of Limoges.——At Journaux, near Bourg, a number of stone coffins have been found containing numerous skeletons. It is supposed to be the site of a Roman burying-ground dating from the time of the presence of Julius Cæsar's army in that part of the country.——The death is announced of two young architects, MM. Peigney and Joigny. M. Joseph Charles Peigny was a pupil of M. André, and succeeded to M. Guicestre as chief of a preparatory atelier of architecture. He was thirty-four years of age. M. Adrien Joigny, who was an admirable writer on architecture, was also a former pupil of M. André.

BERLIN.—The Senate of the Prussian Royal Academy makes known its intention of holding an ordinary (national) exhibition of art next year from May 15 to the end of July. The exhibits will be on view in the temporary iron exhibition building at the Lehrter Bahnhof, in which block this year's international art exhibition was to be seen. The contrast between the two exhibitions will be striking.——The Berlin "Architekten Verein" (the older of the two architectural societies of the city) has published its annual list of members. According to this list the "Verein" has 1,871 members, or more than double the number of the next largest Prussian society, *i.e.*, the one at Hanover with 855. The Munich Architectural Society counts 660 names.——Schliemann's archæological and other bequests to the Prussian Government arrived the other day. The contents of the fifty-six cases sent are to be placed in the Museum für Voelkerkunde.——According to the official statistics, the population of the City of Berlin now numbers 1,620,000, against 1,574,000 in December last year. Including the inner ring of suburbs, Berlin has a population of 1,777,000.——Germany's budget for 1892-93 shows that the Imperial Government intends spending about 75,000,000 marks, or about 3,700,000*l.*, on new Government buildings. Of this sum, however, 1,500,000 is required by the military authorities for new erections, and 700,000*l.* by the administration of the Government railways.——The installation of the electric lighting in the Royal "Schloss" has been completed. The official reception-rooms have 1,960 incandescent lights, of which number 1,005 illuminate the historical "white hall." The private apartments of the Emperor have 560 lights.——The large fountain lately presented to the Emperor by the municipal authorities of the capital is officially known to be Professor Reinhold Begas's work, by whose name the fountain is popularly named "the Begas fountain." Care seems to have been taken that Reinhold Begas should alone get all the laurels for the work. It now, however, transpires that some very well-known sculptors acted as his assistants, and took a very prominent part in the execution of the design. Their names are Karl Begas, Bergmeier, Goetz, and Bernewitz.

MISCELLANEOUS.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—At the meeting of this Association on the 2nd inst., Mr. C. H. Compton in the chair, the contemplated destruction of an ancient Elizabethan house, at Bourn, Lincolnshire, for the purpose of a new line of railway, was announced, and measures were named with a view of averting the removal. Some curious pre-historic implements were exhibited by various members, and a quaint specimen of German book-binding was described by Mr. Loftus Brock, F.S.A. The sides were stamped, with a pattern similar to an Oxford frame, with the words "Jhesus Maria," which are repeated again and again. The date is 1518. A paper was then read by Mr. Walter F. Reid on the discovery of a pre-historic foundry for the fabrication of bronze at St. Columb, Porth, Cornwall. Traces of early settlement were met with in the course of excavations, which afterwards led to the discovery of what has, undoubtedly, been a furnace for the smelting of copper for the manufacture of bronze. The slag has been subjected to careful analysis, which proves the existence of copper. The discovery is of interest

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENT.

COMPETITIONS.

Nature of Work.	By whom Advertised	Premium.	Designs to be delivered.
*Draining of Cairo	Government of Egypt	200*l*.	Jan. 31
*Technical and Public Library Building	Darwen Corporation	50*l*. 25*l*. & 10*l*.	Feb. 15.

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor or Engineer.	Tenders to be delivered.
*Unclimbable Wrot-iron Railings	East Ham Local Board	— Savage	Dec. 14
*Road Works	Tottenham Local Bd.	J. E. Worth	Dec. 15
*Erection of Office, Rosebery-avenue	LondonCountyCouncil	*Official*	do.
*Road Works	Southend Local Board	P. Dodd	do.
Block of Soldiers' Quarters, Old Granby, Devonport	War Department	*Official*	do.
Dwelling-houses at Ruthrieston and other Stations	Gt. North of Scotland Railway	do.	do.
Four Cottages, Mickley, near Newcastle-on-Tyne	T. W. Pattison	.....	do.
*Wood Paving Works	Westminster Vestry	G. R. W. Wheeler	Dec. 16
Eight Houses, Stump Cross, Shibden	.....	J. F Walsh	do.
Alterations of Assize Hall Cells, Bodmin	Cornwall C. C.	W. T. Martyn	do.
Villa Residence, Collingham, Leeds	Jas. Hewitt	C. F. Wilkinson	do.
Retorts, Bricks, &c.	Rochdale Corporation	*Official*	do.
Bridge and Approaches, Pembrey, South Wales	G. W. R. Co.	do.	do.
Road Works, Blaenllecha, Ferndale	Ystradyfodwg Loc. Bd	J. W. Jones	Dec. 17
Additional Buildings, East Moors, Cardiff	Cardiff Tin Stamping & Enamel Co. Lim.	W. J. Grylls	do.
Six Houses, Wakefield-road, Pontefract	.....	W. Hurst	do.
*Purchase and Pulling-down Building Materials	School Bd. for London	*Official*	do.
*Sinking, &c. Well	Leighton Buzzard L. B.	B. Nichols	Dec. 18
Restoring Buildings, Sunbank, Elgin, N.B.	.....	A & W. Reid	do.
*Purchase and Pulling-down Buildings	Battersea Vestry	*Official*	do.
*Making-up Roads	Wood Green L. B.	C. J. Gunyon	do.
Business Premises and Manager's House, Mecomsley	Armfield Plain Co op. Society	J. W. Rounthwaite	Dec. 19
*Works and Materials	Parish of St. George, Hanover-square	G. Livingstone	do.

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
Residence, Stables, and Boundary Walls, Kingsbridge, Devon	C. F. Pawley	William Grainger	Dec. 19
*Waterworks Extension	Leominster U.S.A.	*Official*	do.
*Chalk or Pit Flints	Borough of Kingston-on-Thames	do.	Dec. 21
*Making-up Road, &c.	Lewisham Bd. of Wks.	do.	Dec. 22
*Glazed Stoneware Socketed Pipes	Romford Loc. Bd.	do.	Dec. 23
*Guernsey Granite or Penlee Stone	Tonbridge Union	do.	do.
*Alterations and Additions at Dispensary	Lambeth Guardians	do.	do.
*Fire Engine House, &c.	Hanwell Local Board	E. J. W. Herbert	do.
*Stores and Materials	Nottingham Corp.	Arthur Brown	Dec. 26
Mission Church and Vestries, Hea Moor, Penzance	Rev. F. Tonkin	.....	Dec. 28
*Road-making Works	Willesden Loc. Bd.	O. Claude Robson	Dec. 29
*New Roads and Sewer	Raleigh House Estate, Brixton	F. & W. Stocker	do.
Store and Six Houses, Parkinson-lane, Halifax	Halifax Indus. Soc. Lim.	Horsfall & Williams	Dec. 30
Laying Pipes and Sewerage	Merthyr Tydfil R.S.A.	J. Jones	Jan. 1
*Electric Lighting	Ennis Town Commrs.	*Official*	do.
Shop, Premises, Cornmarket, Halifax	.....	G. Buckley & Son	Jan. 2
*Public Underground Convenience	Paddington Vestry	*Official*	Jan. 4
*Sewerage Works	Hucknall Forhead Loc. Bd.	H. Walker	do.
	Lewisham Union	A. & C. Harston	Jan. 14
	Kensington Guardians	T. W. Aldwinckle	do.
	Royal Agric. Soc.	E. Melville Richards	No date
	Rev. H. Smith	.....	do.
	Nantwich Un. Guar.	*Official*	do.
*Married Soldiers' Quarters, Devonport	War Department	do.	do.
*88 Quarters for Married Soldiers, &c. &c.	do.	do.	do.

PUBLIC APPOINTMENT.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*Sanitary Inspector	Wandsworth B. of W.	2*l*. 2s.	Dec. 22

Those marked with an Asterisk (*) are advertised in this Number. *Competitions*, p. iv. *Contracts*, pp. iv., vi., viii., & ix. *Public Appointments*, p. xx. & xxi.

in relation to the working of copper ore in pre historic times in the county, where, although implements such as picks and shovels of wood have been found in ancient workings from time to time, there does not appear, hitherto, to have been any discovery of the actual smelting works coupled with remains of pre-historic date. There was no trace of the use of a wind blast, such as has been found in Roman works.

THE BRITISH INSTITUTE OF PREVENTIVE MEDICINE.—The *British Medical Journal* states that this institute, which Professor Tyndall describes as "the most pressing need of England at the present time," is now incorporated by Act of Parliament, and 20,000*l*. are forthcoming by promised benefaction, but only on condition that a like sum be raised by public subscription. Sir Joseph Lister is the chairman and Sir Charles Roscoe the treasurer.

"THE LATE JOHN D. SEDDING."—Mr. H. Wilson writes to us to complain of inaccuracies in the report of his paper on the late Mr. Sedding, in particular that he said Sedding worked with "passionate intensity," not "painful intensity," and that he did not say that Academicism and Institutism were "two diseases that dogged the footsteps of the Association" (which is no doubt, as Mr. Wilson spells it, an "incongrous (*sic*) metaphor"), but that they were "two diseases that finally destroy a dying art." Mr. Wilson refused his MS. to the reporters, and (like some other people) does not seem to be aware that following the reading of a written paper with shorthand is a very different thing from the more ordinary task of following a speaker, who always progresses slower than a reader. The mistakes he complains of arose from the fact that the shorthand report had to be too rapidly written to be everywhere quite legible afterwards, owing to the difficulty which Mr. Wilson himself imposed on the reporter by refusing the loan of his MS.

THE REGISTRATION OF PLUMBERS.—Lord Basing, a past President of the Local Government Board, in distributing at Southampton the other day a number of certificates of registration granted by the Plumbers' Company, London, said he felt very pleased that so large a number of those engaged in the trade in that part of the country had obtained the certificates. He had been interested in the subject for some years past, and had attended more than one meeting of the Plumbers' Company. The plumbing industry was essential to the health and comfort of dwellers in houses, and he thought it was high time for the nation to be aroused to the fact. He hoped the time had now arrived when certificates of competency on the part of the plumbers would be as much a matter of course as certificates of competency had for some time been on the part of pharmaceutical chemists. Lord Basing subsequently presented several prizes and certificates of merit given by the Plumbers' Company to successful students in the plumbing classes at the Hartley Institution, Southampton.

THE ENGLISH IRON TRADE.—The English iron market shows few changes on the week, and the trade done is still limited. Both the Scotch and Middlesbrough branches are inanimate, and the hematite pig-iron trade is very quiet. Manufactured iron is in moderate request. Tin-plates are in somewhat better inquiry. Steel prices are slightly higher; but the demand does not exhibit much augmentation. Shipbuilders are fairly brisk, and engineers are in fair employment. The coal trade is rather dull.—*Iron.*

THE BRUSSELS ELECTRIC LIGHT COMPETITION.—The Corporation of Brussels has received six tenders for lighting the Belgian capital by electricity, viz., from the following firms:—Messrs. Ferranti & Co., London; Crampton & Co., London; Siemens & Halske, Berlin; Indiarubber Company (Limited), Silvertown; Compagnie Internationale d'Electricité, Liège; and Schuckert & Co., Nuremberg. The tenders are now under consideration, and an early decision may be expected.

LIVERPOOL ENGINEERING SOCIETY.—The third ordinary meeting of this Society for the present session was held at the Royal Institution on the 25th ult., Mr. John T. Wood, President, in the chair. After the usual routine business, the evening was devoted to the discussion of some questions of practical engineering interest. The first question was introduced by Mr. George Farren, Assoc.M.Inst.C.E., and dealt with the silting up of a small harbour in Carnarvonshire, and the methods adopted to prevent this silting up.—Mr. A. W. Brightmore, Assoc.M. Inst.C.E., submitted to the notice of the meeting some novel methods of land dredging and protecting slopes on some river foundation work in Holland.—Mr. J. H. T. Turner, B.Sc., Assoc.M.Inst.C.E., introduced some questions in connexion with rain gauging and the action of a sewer syphon.—A very interesting discussion took place upon each of the matters brought forward.

REREDOS, BOSTON CHURCH, LINCOLNSHIRE.—On the 30th ult. the Bishop of Lincoln unveiled a new reredos in St. Botolph's Church, Lincoln, the gift of Miss Maud Scrivener, as a memorial of her brother. The work has cost nearly 700*l*., and has been carried out by Messrs. Elwell, of Beverley, in oak, after the design of Mr. C. Weatherley, of Cockspur-street, London. The reredos or eastern screen of oak stretches across the whole width of the chancel. It is placed some distance from the east wall of the chancel, and consists of a central part, with raised wings, the whole being united into one composition by cornices and canopies. The reredos proper comprises a lower and upper series of niches, the latter of open work. Another tier in height provides an additional niche and canopy, the highest point of which is about 32 ft. from the floor of the sanctuary. At the back of the holy table the large canopied panel contains an illustration of the "Last Supper," and the panels at the sides form the following scriptural illustrations:—"Moses lifting up the serpent in the Wilderness," "Abraham offering Isaac," "Jonah and the whale," and the "Ascension of Elijah in the Chariot of Fire."

LEGAL.

CASE UNDER THE EMPLOYERS' LIABILITY ACT:

HUNT *v.* MOWLEM & CO.

IN the City of London Court, on the 27th ult., before Mr. Commissioner Kerr and a jury, the case of Hunt *v.* John Mowlem & Co., was heard. The plaintiff, Charles W. Hunt, sued Messrs. John Mowlem & Co., contractors, to recover the sum of £235 as compensation for injuries he had sustained while in the service of the defendants.

Mr. Henry Kisch was counsel for the plaintiff, and Mr. A. H. Ruegg for the defendants.

In opening, Mr. Kisch explained that the accident which was the subject-matter of the action took place on May 20, while the plaintiff was working under a foreman, named Bills, at the Great Eastern Railway Company's works at Bishopsgate, in connexion with which the defendants had a contract for considerably extending Liverpool-street Station. The plaintiff had been engaged by Bills, as foreman for the defendants, to do certain bricklaying work in connexion with building walls, and while at his work a staging, which had been erected by persons in the employment of the defendants, suddenly gave way, in consequence of it having been insecurely fixed. A labourer was walking across the staging at the time, wheeling a barrow-load of bricks, half of which were precipitated upon the plaintiff below. He was severely injured, and it was believed that he would be permanently incapacitated from following his occupation to the same extent he did before the accident. He had been in receipt of 30s. per week, and this was the basis on which the plaintiff now asked to be compensated.

The plaintiff bore out this statement, and other evidence was called.

For the defence, the defendants said that assuming the gangway or staging was defective, while they regretted the accident very much, they were not in any way liable for what had happened. The building of the walls on which the plaintiff was engaged was entrusted by the defendants to Mr. Bills, who was under a sub-contract to do the work, and who was not, as the plaintiff alleged, a foreman in their service. Bills was not in their employment. The only relationship he held was that of sub-contractor, and it was to Bills that the plaintiff should look for any compensation. Bills was not a man of straw, as had been suggested. He had put up the gangway, and the defendants had no personal knowledge whatever of its construction. Therefore, they ought not to be held liable for the accident which, unfortunately, befell the plaintiff. He was paid by Bills every Saturday and not by the defendants.

The plaintiff, on the other hand, denied that his wages were paid from Bills. He admitted the money was handed him by Bills, but that was on behalf of the defendants.

This was denied.

A body of evidence was called, after which Mr. Commissioner Kerr summed up, asking the jury whether the plaintiff was employed by the defendants or by Bills. They found that Bills was the defendants' foreman, and that the accident resulted from his negligence, as well as that of a foreman named Speechley. They assessed the damages at 175*l*., and judgment was entered for the plaintiff for that amount, with costs.

The defendants intimated their intention of appealing from the decision.

MEETINGS.

MONDAY, DECEMBER 14.

Royal Institute of British Architects.—Mr. Horace Townsend on "American Theatres." 8 p.m.

Society of Arts (Cantor Lectures).—Mr. A. P. Laurie, M.A., on "The Pigments and Vehicles of the Old Masters." III. 8 p.m.

Leeds and Yorkshire Architectural Society.—Social evening. 7.30 p.m.

TUESDAY, DECEMBER 15.

Institution of Civil Engineers.—Discussion on Mr. Henry Gill's paper on "The Sale of Water by Meter in Berlin." 8 p.m.

WEDNESDAY, DECEMBER 16.

Institution of Civil Engineers.—Students' visit to the stations of the Westminster Electric Supply Corporation, 11, Millbank-street, and Eccleston-place, S.W. 2 p.m.

Society of Arts.—General Pitt Rivers on "Typological Museums, as exemplified by the Pitt Rivers Museum at Oxford." 8 p.m.

Society of Engineers.—Annual Dinner: Holborn Restaurant. 6 15 p.m.

Royal Meteorological Society.—Two papers will be read. 7 p.m.

THURSDAY, DECEMBER 17.

Society of Antiquaries.—8.30 p.m.

FRIDAY, DECEMBER 18.

Bradford Historical and Antiquarian Society.—Mr. W. Cudworth on "The Antiquities on Baildon and Rumbolds Moors." 8 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

18,139.—VENTILATING AND DAMP-RESISTING BRICK: *W. Adamson.*—This brick is made on a dove-tailing principle, having a groove on one side and a spigot on the other. It is adapted to ventilating, and to the conveyance of wire, pipes, &c., and is also a protection against damp.

20,384.—WINDOW-SASHES: *D. Crosser* (U.S.A.).—The sash which is the subject of this patent is provided with a groove or recess made entirely around the apertures for containing the glass. In these grooves the glass is placed, and is held in position by four strips of wood, three of which are dove-tailed to retain themselves and the glass in position. The fourth piece has its edges concaved to engage the convexed surface of the two side-pieces. The glass is thus firmly secured in place.

13.—WINDOW AND DOOR-FITTINGS: *J. Sim.*—The windows or doors can, it is claimed, be raised up and swivelled inwards, resting on plates in the frame-sill, and fall down automatically when closed. There is a spring and a "spring-keeper" to hold the sash or door firmly pressed against the stops when closed.

226.—WATER-PIPES: *W. Dantec.*—To prevent the bursting of water-pipes when frost sets in, a relief-chamber is provided, fitted with elastic diaphragms, the air being forced against these by the action of freezing.

11,821.—SASH-FASTENERS: *T. A. Shaw.*—According to this invention, a bolt works in a metal case, the extending end being fitted with a knob. In the interior a cross-plate or partition is fixed, in which one or more slots are cut corresponding with projections on the bolt. The bolt is shot into a strong metal eye. If the bolt is turned so that its projections are not opposite the slots, it cannot be moved backward or forward.

NEW APPLICATIONS FOR LETTERS PATENT.

November 23.—20,323, A. & F. Fiddes, and C. Franklin, Hot-water Apparatus for Heating Horticultural Buildings, &c.—20,325, M. Syer, Syphon Water-waste Preventing Cistern.

November 24.—20,370, J. Pring, Step-ladders.—20,406, F. Lynde, Drain-pipes, &c.—20,437, W. Thompson, Manufacturing Plate-glass.

November 25.—20,467, J. Kirkman, Waste Water-closets.—20,493, F. Ashford, Heating Greenhouses, &c.—20,526, J. Pett and R. Matthews, Chimney-cowls and Ventilators.—20,535, H. Leigh, Mechanism for Closing Doors and Swinging Shutters.

November 26.—20,549, S. Kirk and W. McDougal, Lock and Hanging Window-frame and Sash.—20,571, W. Nation, Erecting Buildings with a Novel Combination of Material.—20,587, The Bostwick Gate and Shutter Company, Automatic Clutch Bolt-lock.

November 27.—20,616, R. Taylor, Tunnelling in Soft and Water-bearing Material.—20,646, H. Parry, Kilns for Burning Lime.

November 28.—20,725, W. Bloor, Door-latches.—20,740, J. Blakesley, Fireproof Floors, &c.—20,743, J. Abell, Paving.—20,771, J. Slack, Producing Decorative or other Designs upon Ceramic Ware, &c.—20,772, H. Smart, Planes.—20,797. J. Hughes and E. Jones, Screws.—20,798, M. Reed, Slow-combustion Stoves.

PROVISIONAL SPECIFICATIONS ACCEPTED.

16,984, R. Robisher and E. Greenhalgh, Window-sashes.—17,576, S. Dix, Flushing Water-closets.—17,846, J. Dobson, Drain Traps.—17,891, A. Emery, Sash-fastener.—18,007, G. Goldsmith and others, Ventilator.—18,910, J. Anderson, Drain Traps.—18,963, N. Sorensen, Retaining Doors, &c., in their open positions.—19,266, W. Thompson, Window-fasteners.—19,383, A. Lamplough, Sash-fastener.—19,540, D. Ogilvy, Ventilator.—19,606, J. Quarmby, Ventilating and Warming.—19,684, A. Berry, Arresting the motion of and holding open doors.—19,740, G. Jackson, Constructing Concrete Buildings.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

1,247, J. Shanks, Lavatories or Washhand-basins.—1,259, P. Bracher, Chimney-tops or Ventilating Terminals.—1,317, W. Dalling, Chimney-tops for House Chimneys.—1,337, W. Munns, Building Construction.—1,345, H. Burnet, Preventing Water-pipes from Bursting.—18,340, W. Pattenden and A. Rindesland, Window-sashes.—18,509, C. Lavington, Roof-gutters and Snow-guards.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

NOVEMBER 30.—By *D. Young*: "Elm Lodge," f., Queen's-rd., Teddington, 600*l.*; 2 and 3, Foot's-row, Battersea, f., 180*l.*—By *Beard & Son*: 40, Seymour-st., Euston-sq., u.t. 27 yrs., g.r. 8*l.*, r. 60*l.*, 525*l.*; Nos. 589 and 591, King's-rd., Fulham, u.t. 62 yrs., g.r. 10*l.*, 780*l.*—By *E. Wood*: 33, Cranbrook-pk., Wood Green, u.t. 80 yrs., g.r. 5*l.*, r. 22*l.*, 145*l.*; 67, Caledonian-rd., King's Cross, u.t. 43 yrs., g.r. 8*l.*, r. 50*l.*, 430*l.*; 48, Akerman-rd., Brixton, u.t. 23 yrs., g.r. 5*l.* 4*s.*, r. 36*l.*, 205*l.*—By *Geo. Goldsmith, Son, & Co.*: 20, Churton-st., Pimlico (sold before auction). By *Collier & Henderson*: Grove-lane, "Fernbank," Stamford-hill, u.t. 84 yrs., g.r. 7*l.*, 330*l.*; two enclosures of land, 4a. 3r. 38p.; and 6a. 0r. 6p., f., Preston, Brighton, 4,200*l.*; three plots of freehold land, 8a. 3r. 1p., 3,110*l.*; two plots of freehold land, 6a. 3r. 25p., 1,800*l.*; a plot of freehold land, 0a. 3r. 29p., 500*l.*; two plots of freehold land, Dyke-rd., 750*l.*; a plot of freehold land, Tivoli-rd., 600*l.*

DECEMBER 1.—By *Protheroe & Morris*: Five plots of freehold land, Leytonstone, 413*l.*—By *Eastman Bros.*: "Woodville," Croydon-rd., Anerley, u.t. 60 yrs., g.r. 12*l.*, 810*l.*—By *Mullett, Booker, & Co.*: 10, Westbourne-st., Hyde-pk., u.t. 44 yrs., g.r. 8*l.*, 5,300*l.*; 8, Westbourne-mews, u.t. 36 yrs., g.r. 5*l.*, 570*l.*—By *J. H. Bulmer*: 50 to 56 (even), Downes-st., Old Kent-rd., u.t. 36 yrs., g.r. 24*l.*, r. 107*l.* 18*s.*, 280*l.*; 97, Delaford-rd., Bermondsey, u.t. 86 yrs., g.r. 5*l.*, 240*l.*; 83, Chilton-st., Rotherhithe, u.t. 43 yrs., g.r. 2*l.* 10*s.*, 210*l.*—By *Debenham, Tewson, & Co.*: f.g.r. of 665*l.*, Poultry, City, with reversion in 68 yrs., 16,720*l.*; 65, Warrington-cres., Maida Vale, u.t. 81 yrs., g.r. 16*l.*, 1,420*l.*; f.g.r. of 7*l.* 10*s.*, Newington Green-rd., Canonbury, with reversion in 60 yrs., 220*l.*; f.g.r. of 201*l.* 12*s.*, St. Paul's-rd., with reversion in 60 yrs., 5,405*l.*; f.g.r. of 9*l.*, Hornsey-rd., Holloway, with reversion in 60 yrs., 2,485*l.*; f.g.r. of 20*l.*, Andover-rd., with reversion in 60 yrs., 515*l.*; f.g.r. of 40*l.*, Andover-st., with reversion in 60 yrs., 1,070*l.*

DECEMBER 2.—By *A. & A. Field*: 31, High-st., Poplar, f., r. 26*l.*, 200*l.*; 96, Bromley-st., Commercial-rd., E., u.t. 17 yrs., g.r. 2*l.* 10*s.*, r. 28*l.*, 150*l.*; 14, Devonport-st., u.t. 22 yrs., g.r. 4*l.*, r. 28*l.*, 185*l.*; 12 and 13, Thomas-st., u.t. 22 yrs., g.r. 6*l.*, r. 52*l.*, 260*l.*; 49 and 50, Smith-st., Mile-end, u.t. 22 yrs., g.r. 4*l.*, 170*l.*; 96, 98, and 100, Dempsey-st., u.t. 22 yrs., g.r. 9*l.*, r. 90*l.*, 605*l.*; 25, Grove-st., Commercial-rd., E., u.t. 11 yrs., g.r. 2*l.*, 70*l.*; 122, Evering-rd., Clapton, u.t. 83 yrs., g.r. 8*l.* 10*s.*, r. 46*l.*, and a f.g.r. of 5*l.* 10*s.*, with reversion in 75 yrs., 540*l.*—By *Messrs. Chadwick*: 144, Queen's-rd., Bayswater, u.t. 46 yrs., g.r. 7*l.* 10*s.*, r. 85*l.*, 710*l.*; 83, Harrow-rd., Paddington, u.t. 59 yrs., g.r. 15*l.*, r. 68*l.*, 560*l.*; 47 and 90, Woodchester-st., u.t. 62 yrs., g.r. 10*l.*, 700*l.*—By *Boyce & Evens*: 56 and 57, Allerton-st., Hoxton, u.t. 17 yrs., g.r. 6*l.* 10*s.*, r. 66*l.* 6*s.*, 235*l.*; 18, 20, 37 to 43 (odd), Hawkins-st., Mile-end, u.t. 9 yrs., g.r. 13*l.* 15*s.*, 370*l.*—By *J. H. Hibbard*: 30 and 32, Salisbury-rd., Highgate, u.t. 53 yrs., g.r. 15*l.*, 265*l.*; 32 and 34, Frankton-rd., Peckham, u.t. 65 yrs., g.r. 5*l.* 10*s.*, r. 52*l.*, 280*l.*

DECEMBER 3.—By *Ventom, Bull, & Cooper*: 30, Longfellow-rd., Mile End, f., r. 26*l.*, 270*l.*; 11, Sampson's-gardens, Wapping, f., 275*l.*—By *St. Quintin & Son*: 37, Crispin-st., Spitalfields, f., r. 80*l.*, 1,350*l.*; 38, Crispin-st., f., area 1,550 ft., 780*l.*—By *Stimson & Sons*: f.g.r. of 35*l.* 11*s.*, Gloucester-pl., Mortlake, u.t. 59 yrs., g.r. 8*l.* 15*s.*, 320*l.*; f.g.r. of 40*l.*, Sheen-lane, u.t. 56 yrs., g.r. 16*l.* 16*s.*, 290*l.*; "Woodville Cottage," High-st., Westerham, f., r. 15*l.*, 280*l.*; 17 and 18, Cancel-st., Walworth, u.t. 14½ yrs., g.r. 8*l.*, r. 62*l.* 8*s.*, 175*l.*; 67, Comerford-rd, Brockley, u.t. 91 yrs., g.r. 5*l.* 5*s.* 340*l.*; 2, 4, 7, 9, and 11, Hanbury-rd., Peckham, u.t. 84 yrs., g.r. 22*l.* 10*s.*, 945*l.*; 57, Abbeville-rd. North, Clapham, f., r. 35*l.*, 460*l.*—By *C. C. & T. Moore*: 26, St. Leonard's-rd., Poplar, f., r. 30*l.*, 565*l.*; 40 to 46 (even), St. Leonard's-rd., f. r. 104*l.*, 1,245*l.*; 15 and 16, George-st., Commercial-rd., E., f., r. 57*l.* 4*s.*, 480*l.*; 29, White Horse-lane, Mile End, f., r. 33*l.* 16*s.*, 420*l.*; 132 and 136, Stepney-green, u.t. 51 yrs., g.r. 10*l.*, 500*l.*; 592, Commercial-rd., E., u.t. 20 yrs., g.r. 1*l.* 9*s.*, r. 32*l.* 10*s.*, 370*l.*; 33, Jane-st., St. George's-in-the-East, u.t. 9 yrs., g.r. 3*l.*, 80*l.*; "The Exmouth Arms" Beer House, Clerkenwell, u.t. 24 yrs., g.r. 25*l.*, r. 65*l.*, 465*l.*—By *Newbon & Co.*: 168, 170, 174 to 180 even, Adrian-ter., Earl's-court, f., r. 356*l.*, 4,965*l.*; Adrian-ter., f.g.r. of 10*l.*, with reversion in 75 yrs., 260*l.*; 25, Doughty-st., Mecklenburg-sq., u.t. 17 yrs., g.r. 24*l.*, r. 70*l.*, 210*l.*; 9, Wilmington-sq., Clerkenwell, u.t. 23 yrs., g.r. 12*l.*, r. 50*l.*, 325*l.*; 7, Belitha-villas, Barnsbury, u.t. 23 yrs., g.r. 10*l.*, r. 48*l.*, 300*l.*; F g.r. of 4*l.* 4*s.*, with reversion in 72 yrs., New-rd., Barnet, 95*l.*

DECEMBER 4.—By *Toplis & Harding*: 16, Charlotte-st., Fitzroy-sq., f., r. 75*l.*, 1,200*l.*; 41, Gloucester-st., Bloomsbury, f., r. 51*l.*, 800*l.*: 45, Red Lion-st., Clerkenwell, f. (sold before auction).—By *E. Millard*: 20, 22, 26, and 28, Este-rd., Battersea, u.t. 25 yrs., g.r. 20*l.*, r. 156*l.*, 720*l.*; l.g.r. of 225*l.*, Addison-rd., Kensington, u.t. 13 yrs., g.r. 25*l.*, 1,670*l.*

[*Contractions used in these lists.*—f.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.]

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.	ton	9/0/0 0/0/0
Teak, E.I...	load	9/10/0 15/0/0
Sequoia, U.S. ft. cu.		2/3 3/0
Ash, Canada	load	2/10/0 4/0/0
Birch, do.		3/0/0 4/5/0
Elm, do.		3/10/0 4/15/0
Fir, Dantsic, &c.		2/0/0 3/10/0
Oak, do.		2/10/0 4/10/0
Canada		5/0/0 7/0/0
Pine, Canada red		2/10/0 3/10/0
Do, yellow		2/10/0 5/0/0
Lath, D'ntsic, fath		5/5/0 6/10/0
St. Petersburg		5/10/0 7/10/0
Deals, Finland, 2nd & 1st std	100	8/10/0 10/10/0
Do, 4th & 3rd		7/10/0 8/10/0
Do, Riga		6/10/0 8/0/0
St. Petersburg, 1st yellow		10/10/0 15/0/0
Do. 2nd yellow		8/10/0 10/0/0
Do. white		7/0/0 10/10/0
Swedish		7/15/0 16/0/0
White Sea		8/10/0 17/10/0
Canada, Pine 1st		19/10/0 25/10/0
Do. do. 2nd		14/10/0 16/10/0
Do. do. 3rd, &c.		6/10/0 10/10/0
Do. Spruce. 1st		8/10/0 11/0/0
Do. do. 3rd & 2nd		6/10/0 8/0/0
New Brunswick		7/0/0 7/10/0
Battens, all kinds		3/10/0 15/10/0
Flooring Boards, sq., 1 in. prep. 1st		9/8/6 9/14/6
Do. 2nd		9/7/6 9/11/6
Other qualities		9/5/3 9/8/0
Cedar, Cuba	ft.	3½ 4½
Honduras, &c.		3½ 4½
Mahogany, Cuba, St. Domingo, cargo av		4½ 6½
Mexican do. do		4 5
Tobasco do. do		5½ 7
Honduras do.		5½ 6½
Box, Turkey	ton	4/0/0 12/0/0
Rose, Rio		10/0/0 20/0/0
Bahia		9/0/0 18/0/0
Satin, St. Domingo	ft.	0/0/9 0/1/3

TIMBER (*continued*).		
Satin, Porto Rico	0/0/10	0/1/6
Walnut, Italian	0/0/3½	0/0/7
METALS.		
IRON—Pig, in Scotland	ton	2/7/0 2/7/6
Bar, Welsh, in London		6/0/0 6/2/6
Do. do. at works in Wales		5/10/0 5/12/8
Do. Staffordshire, in London		6/10/0 6/15/0
COPPER—British, cake and ingot		49/0/0 51/0/0
Best selected		50/0/0 52/0/0
Sheets, strong		59/0/0 60/0/0
Chili, bars		46/12/6 47/0/0
YELLOW METAL	lb.	0/0/5⅜ 0/0/5¾
LEAD—Pig, Spanish	ton	11/5/0 11/7/6
English, com. brands		11/12/6 11/15/0
Sheet, English, 3 lbs. per sq. ft. and upwards		13/5/0 0/0/0
Pipe		13/15/0 0/0/0
ZINC—English sheet	ton	26/0/0 0/0/0
Vieille Montagne		26/10/0 0/0/0
TIN—Straits		91/0/0 91/10/0
Australian		91/0/0 91/10/0
English Ingots		95/0/0 95/10/0
OILS.		
Linseed	ton	18/12/6 18/17/6
Cocoanut, Cochin		26/15/0 27/0/0
Do. Ceylon		23/10/0 23/15/0
Palm, Lagos		23/10/0 0/0/0
Rapeseed, English pale		29/10/0 0/0/0
Do. brown		28/0/0 0/0/0
Cottonseed ref.		18/5/0 0/0/0
Oleine		0/0/0 0/0/0
Lubricating, U.S.		4/10/0 5/10/0
Do. refined		6/0/0 11/0/0
TAR—Stockholm	barrel	0/19/0 1/0/0
Archangel		0/12/6 0/0/0

TENDERS.

[Communications for insertion under this heading must reach us *not later than* 12 *noon on Thursdays.*]

ABERGAVENNY.—For the erection of dormitories at the Joint Counties Asylum, for the Committee of Visitors. Mr. Alfred Swash, architect, 5, Monk-street, Abergavenny. Quantities by architect:—

J. T. Thomas, Lion-street, Abergavenny (accepted) £885

[Nine tenders were received.]

BISHOP'S HULL (Somerset).—For building new schools, master's residence, boundary walls, &c., for the Bishop's Hull School Board. Mr. George C. Strawbridge, architect, Taunton:—

J. Morse	£2,375	W. Harrison	£2,075
H. J. Spiller	2,360	J. Mountstephens	1,985
W. Sloman	2,300	Rendell & Son*	1,949
S. Derham	2,150	A. J. Spiller	1,940

* Accepted.

CARDIFF.—For the erection of new premises, The Hayes, for Messrs. Morgan & Co. Mr. Peter Price, architect, 20, High-street, Cardiff. Quantities by the architect:—

Jones Bros.	£5,350	Stephen, Bastow & Co.	£4,800
Burton & Co.	5,271	Hy. Gibbon	4,600
D. G. Price	4,950	Turner & Sons, Cardiff*	4,568

* Accepted.

CARDIFF.—For the erection of a district police-station, East Moors, for the Corporation. Mr. W. Harpur, M.Inst.C.E., Surveyor, Town Hall, Cardiff. Quantities supplied:—

E. Harvey	£5,094 0 0	J. Allan	£4,777 0 0
J. W. Rogers	5,077 0 0	H. Gibbon	4,604 15 9
Burton & Co.	4,949 10 0	Turner & Son	4,354 0 0
J. Robbins	4,944 8 2	T. R. Waterman, Cardiff (accepted)	4,256 10 0
Exors. of W. Gradwell	4,891 10 7		

CARDIFF.—For the erection of a warehouse in Frederick-street, for Messrs. Jones, Dickson, & Co. Messrs. Seddon & Carter, architects, Bank-buildings, St. Mary-street, Cardiff. Quantities by the architects:—

J. Strachan	£2,251 0 0	W. Dowland	£1,980 0 0
E. Harvey	2 206 13 2	Bowers & Co.	1,920 0 0
L. Parnell	2,156 0 0	Turner & Son, Cardiff (accepted)	1,768 0 0
J. Haines	2,010 0 0	J. W. Roger	1,745 0 0
Johnson Bros.	2,000 0 0		

CLACTON-ON-SEA.—For erecting a pair of villa residences in the North Avenue, Clacton-on-Sea, Essex, for Mr. R. W. Dove. Mr. T. A. Cressy, architect, Colne-road, Clacton-on-Sea:—

Ellis & Turner	£900	Mark Potts (accepted)	£805

CLACTON-ON-SEA.—For erecting a house for Mr. C. R. A. Drake, in the Old-road, Clacton-on-Sea, Essex. Mr. A. W. Haxter, surveyor, Bank Chambers, Clacton-on-Sea:—

Mark Potts (accepted) £450

DUNSTABLE.—For alterations to "North Western" Brewery, for Mr. B. Bennett. Mr. W. J. Pearson, architect, Market-hill, Luton:—

J. Cheshire	£217 10	J. Robinson*	£161 0
G. H. White	178 0		

* Accepted.

HALIFAX.—For the erection of a shop in Corn-market. Mr W. H. D. Horsfall, architect, 9, Harrison-road, Halifax:—

Mason—William Sutcliffe, Sowerby Bridge, near Halifax		£491	0 0
Joiner—Sam Greenwood, Boothtown-road, Halifax		195	0 0
Plumber—Joseph Lawson, Brighouse		88	0 0
Slaters and Plasterers—J. Bancroft & Son, Lister-street, Halifax		47	8 9

HALIFAX.—Accepted for the erection of two villa residences, stable, greenhouse, gates, and boundary walling, in Francis-street, Halifax. Mr. T. Lister Patchett, architect, Halifax:—

Excavator, Mason, and Bricklayer—Edwin Naylor, Halifax		£716	0 0
Carpenters and Joiners—F. Greenwood & Son, Halifax		315	0 0
Slaters and Plasterers—Blackburn & Davenport, Halifax		190	0 0

LONDON.—For partially rebuilding the flank walls of premises in Macklin-street, Drury-lane, for the London County Council. Mr. Thomas Blashill, Architect:—

G. H. & A. Bywaters	£449	G. S. Williams & Son	£333
Brass & Son	363	Stimpson & Co.*	320
Perry & Co.	350		

* Accepted.

LONDON.—For making up and paving Tilton-street, and Lintaine grove, for the Vestry of the Parish of Fulham. Mr. W. Sykes, New Streets Surveyor:—

Name.	Tilton-street. R.*	Tilton-street. Paving. Y.S.†	Tilton-street. Paving. A.S.‡	Tilton-street. Paving. S.G.§	Lintaine-grove. R.*	Lintaine-grove. Paving. Y.S.†	Lintaine-grove. Paving. A.S.‡	Lintaine-grove. Paving. S.G.§
	£	£	£	£	£	£	£	£
E. Rogers & Co.	425	—	—	—	653	—	—	—
Tomes & Wimpey	412	157	—	—	720	232	—	—
J. Mears	365	—	—	—	578	—	—	—
Nowell & Robson	441	—	125	—	723	—	185	—
T. Adams	426	—	—	—	661	—	—	—
Stuart's Gran. Co.	—	—	—	118	—	—	—	195

* Roadway. † York stone. ‡ Adamant stone. § Stuart's granolitic.

LONDON.—Accepted for the erection of stabling at Blackheath, S.E., for Mr. Thomas Tilling. Messrs. Jarvis & Son, architects, 29, Trinity-square, S.E.:—

Kennard Bros., Lewisham Bridge* £2,710 0 0

* Amended estimate.

LONDON.—Accepted for the erection of residence at Blackheath Park, S.E., for the Rev. H. W Dennis, M.A.:—

Kennard Bros., Lewisham Bridge £900 0 0

LONDON.—Accepted for the erection of residence at Dartmouth-row, Blackheath, S.E., for Miss Pontifex:—

Kennard Bros., Lewisham Bridge £900 0 0

LONDON.—For erecting stabling, Old Kent-road, S.E., for Mr. James Gathercole. Messrs. Waring & Nicholson, architects, 55, Parliament-street, Westminster:—

H. Hall	£749	Lapthorne & Co.	£698
J. Marsland	698	Williams & Carnall	560

LONDON.—For rebuilding No. 26, Finsbury-square, E.C., and other works in connexion with the enlargement of "Buecker's" Hotel, for Mr. G. Hobby. Mr. John Groom, architect, No. 1, Broad-street-buildings, Liverpool-street, E.C. Quantities by Mr. Henry Theobald, F.S.I., No. 87, Finsbury-pavement, E.C. :—

Woodward & Co.	£3,573	Stimpson & Co.	£3 360
W. Gregar & Son	3,567	Mattock Bros.	3,133
E. Lawrence & Sons	3,437	H. L. Holloway, Deptford*	2,973

* Reduced estimate accepted, £2,820.

LONDON.—Accepted for the erection of stabling, &c., at Walworth-road, S.E., for Messrs. Claradge & Lidle. Mr. A. L. Guy, architect, Lewisham :—

Kennard Bros., Lewisham Bridge £520 0 0

LONDON.—For constructing two iron escape staircases at the Industrial Schools, Plashet, Upton Park, E., for the Guardians of the Parish of St. George-in-the-East. Messrs. Wilson, Son, & Aldwinckle, architects, 1, Victoria-street, S.W. :—

J. Holland	£269 0	The East Surrey Iron-works	£197 10
B. E. Nightingale	255 0	The Constructional Iron-work Co.	177 0
St. Pancras Ironworks Co.	217 0	F. W. Cole (accepted)	159 10

LONDON.—For alterations to the basement of No. 64, Oxford-street, W., for Messrs. George Rowney & Co. Mr. Walter J. Ebbetts, architect, Savoy House, 115, Strand, W.C. :—

W. Smith ..... £141 0 | H. Baylis (accepted) £135 15

LONDON.—For rebuilding residential flats and shops, Nos. 35 and 36, Sloane-street, S.W., for Messrs. Herbert, Best, and others :—

C. F. Kearley (accepted) £5,479 0 0
(Additional story) 800 0 0

LONDON.—For rebuilding premises, 91, Blackman-street, S.E., for the trustees of the late Mr. H. Pigeon. Messrs. Wylson & Long, architects, 15, King William-street, Strand :—

C. F. Kearley (accepted) £1,388 0 0

LONDON.—For erecting new Relief Station, at Stockwell-road, for the Lambeth Guardians. Mr. S. R. J. Smith, architect :—

Richardson	£1,653 0	Garratt	£835 0
Linfield	1,098 0	Ford	833 0
R. Seed	1,046 0	Triss	804 0
Frampton	987 0	Webb	800 0
Morgan	928 0	Scharieu	793 0
Hunt	920 0	Deacon	782 0
Richards	919 0	Somerford	768 0
Nightingale	918 0	Jackson	760 0
Wallace	895 0	Rice & Son	757 0
Barker	893 0	Martin	755 0
Cowper	886 10	Young & Lonsdale*	739 0
Castle	873 0	Kimpton	735 0

* Accepted.

LUTON.—For the erection of two residences, London-road, for Mr. J. T. Needham. Mr. W. J. Pearson, architect, Market-hill, Luton :—

T. & E. Neville £900 0 0

LUTON.—For the erection of new medical institute, doctor's residence, stabling, &c., Waller-street, for the Trustees. Mr. W. J. Pearson, architect, Market-hill, Luton :—

J. Saunders	£2,916 6	G. Dunham	£2,760 0
G. Smart	2,800 0	C. Wright	2,547 0
D. Parkins	2,798 0	G. Kingham	2,534 0
G. Pryer	2,780 0	T. & E. Neville *	2,386 0

* Accepted.

NEWRY (co. Down, Ireland).—For building Town-hall and Municipal offices, Newry, co. Down. Mr. William Batt, architect, Garfield Chambers, Belfast. Quantities by Mr. S. C. Hunter, Belfast :—

Bright Bros.	£7,906	J. Lowry & Son	£7,050
R. Corry	7,755	Dixon & Campbell	6,850
A. Whelan	7,330	Collen Bros., Portadown*	6,632
D. Mahood	7,177		

* Accepted.

NORTH PETHERTON (Somerset).—Accepted for heating hall and conservatories, at Shovell-hill, North Petherton, with the small tube heating apparatus, for Mr. Alfred B. James, Mr. George C. Strawbridge, architect, Taunton :—

James Stevens, Taunton £145 0 0
[Lowest of three tenders.]

RICHMOND (Surrey).—For new Sewerage Works, Richmond. Mr. James Lemon, M.Inst.C.E., engineer, 9, Victoria-street, Westminster. Quantities by Mr. J. H. Blizard, A.M.Inst.C.E.:—

John Neave	£3,565	Wm. Neave & Son	£2,233
Killingback & Co.	3,373	T. P. Hall	2,108
Oscnton	2,889	Jackson, Plaistow*	1,990
Thos. Adams	2,571	F. Reeks	1,989

[Engineer's estimate, £2,100.]

* Accepted, Mr Jackson being the contractor for other works in the Borough, now being carried out.

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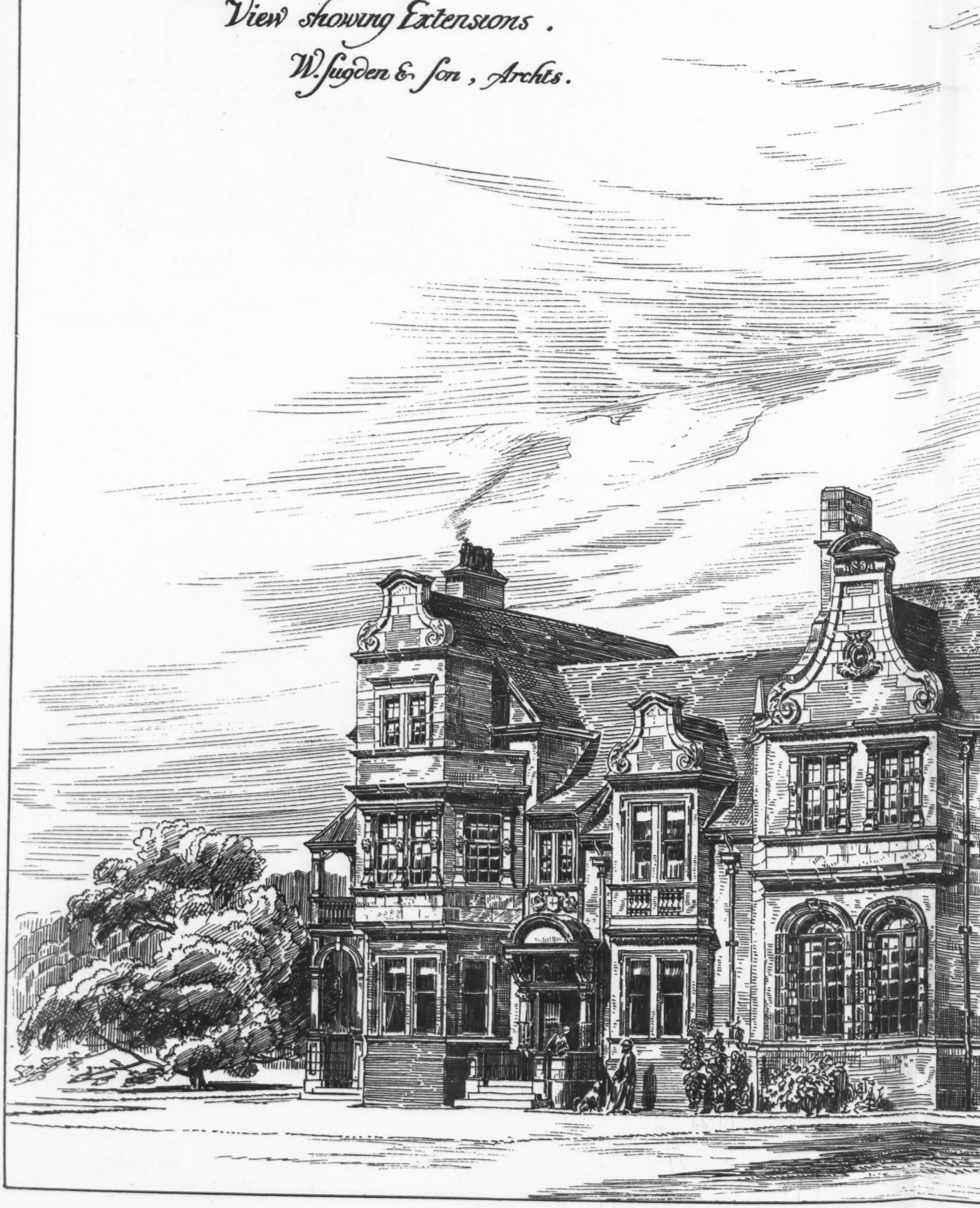

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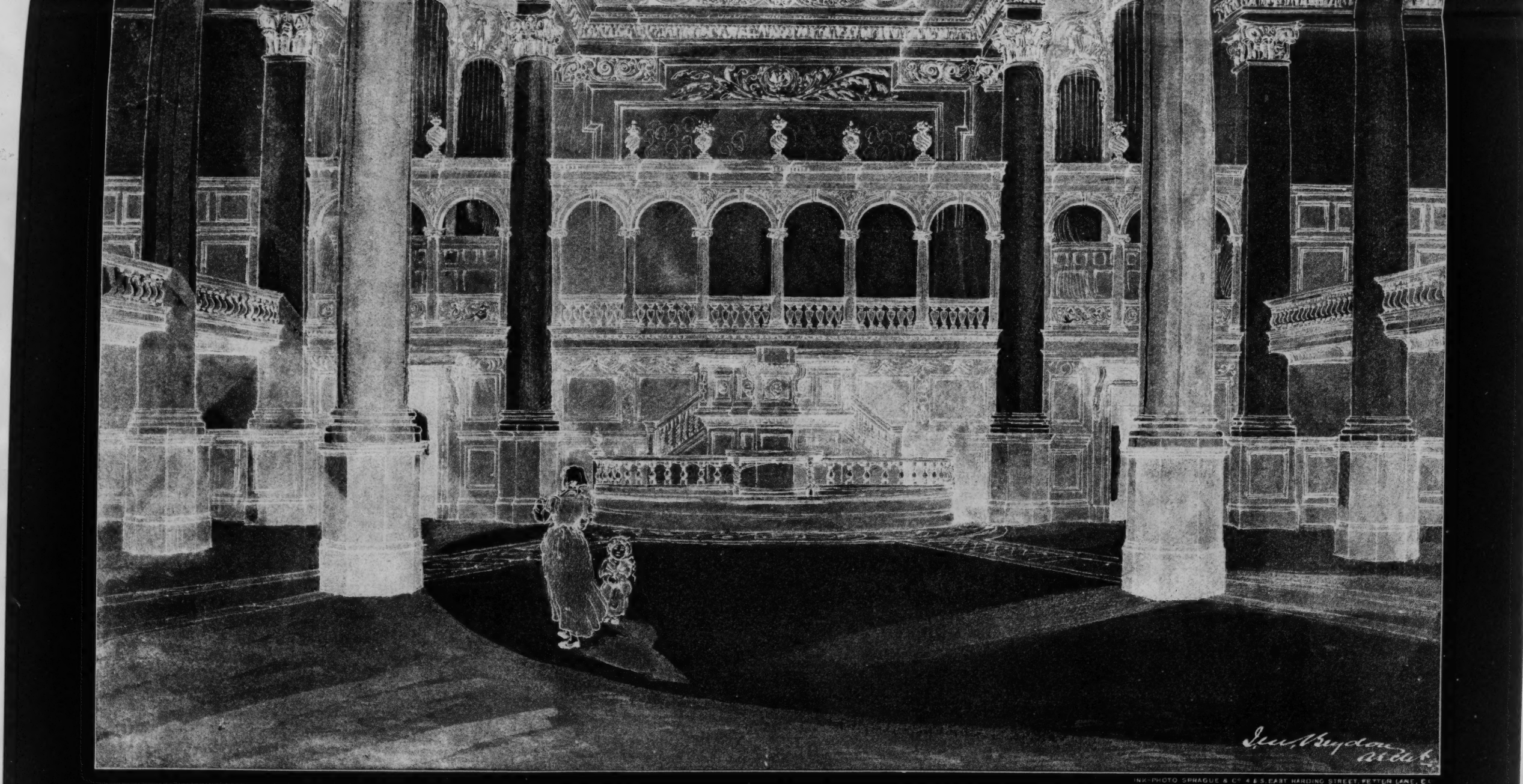

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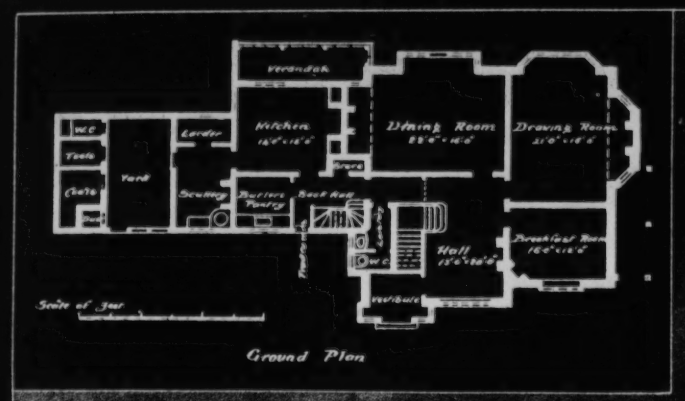

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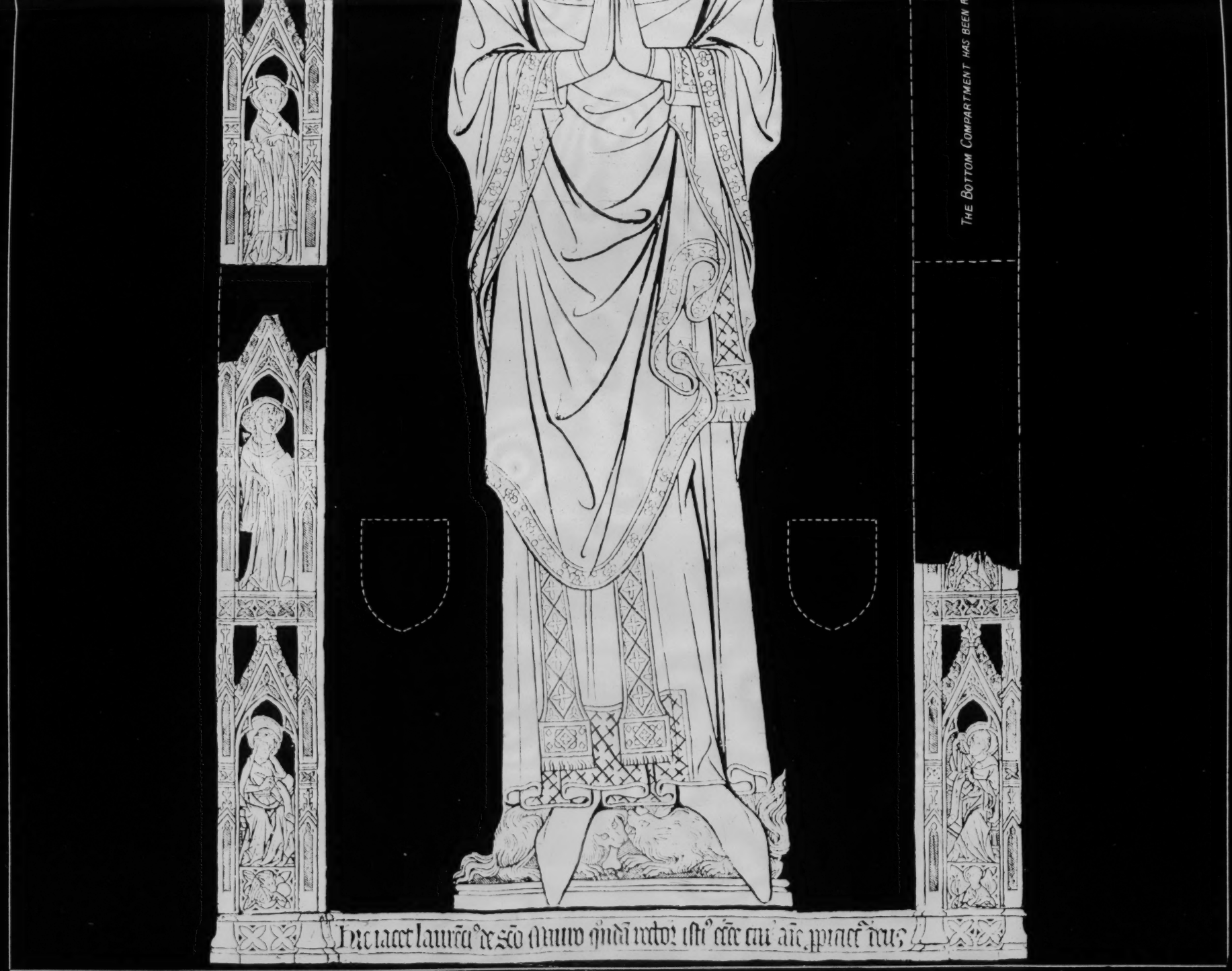

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